AVICULTURAL MAGAZINE

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Young Common Bronzewing (*Phaps chalcoptera*).
Adult in background.

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Brush Bronzewing (*Phaps elegans*).
The cock brooding young.

Frontispiece]

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
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THE BRONZEWING DOVES OF AUSTRALIA

By DAVID SETH-SMITH (Guildford, Surrey, England)

The various foreign pigeons and doves are not, perhaps, amongst the most popular of aviary birds, but they are certainly very attractive and, although not so gaudy in plumage as some of the aviculturist's favourites, are by no means lacking in beauty. For my part, I was always very attracted by some of the Australian species, especially those belonging to the group known as the Bronzewings, a name derived from the patch of lustrous, iridescent feathers carried, to a greater or lesser extent, on the wings of all of them. In none is this more pronounced than in the so-called Common Bronzewing (*Phaps chalcoptera*), call it pigeon or dove as you please, which is the largest, and to be found in almost all parts of the Australian continent, inhabiting mostly the scrub country.

Although the chief colour of this bird is brownish-grey, the forehead of the male is buff, the breast pinkish, and the secondaries and wing-coverts glistening bronze, changing in varying lights to purple, green, and coppery red. When viewing a cock Bronzewing as it reposes on the ground in brilliant sunlight, one is struck by its dazzling beauty. The sexes are easily distinguished as the hen is not so brightly coloured. This species, which is about the size of a common pigeon, does well in an outdoor aviary so long as it has adequate shelter from the winter cold. The nest, composed of a few small twigs or bents, is built at no great distance from the ground, and there are generally two pairs of young reared in a season. All the Bronzewings feed chiefly or entirely upon the ground, upon various small seeds. In captivity they eat canary, millet, wheat, and dari, and I have seen a Common Bronzewing devouring with gusto a large earthworm, which shows that a certain amount of animal food is sometimes taken.

The Brush Bronzewing (*Phaps elegans*) is somewhat smaller than the last-named, and less widely distributed in the wild state, being more or less confined to the southern parts of Australia and Tasmania. I had the good fortune to meet with both species in Australia, often

recognizing their notes when the birds themselves were not visible. The smaller species has a good deal of chestnut in its coloration, and the sexes of the adult birds are easily distinguishable by the hen being the duller of the two. It is a delightful aviary bird, tame and gentle in disposition. The first I had, now many years ago, were received during the winter months, but went to nest at once in a moderately warmed aviary, building the usual frail type of pigeon's nest on some brushwood about five feet from the ground. The first pair of young were somewhat weakly, a common fault with winter-reared birds, but later broods in the spring and summer were quite a success. As is common to the pigeon tribe, the cock bird did most of the sitting and brooding during the daytime, the hen taking over at night.

The Crested Bronzewing, Crested Dove, or Crested Pigeon (*Ocyphaps lophotes*), is another very attractive species of elegant shape and form, its beauty enhanced by its upstanding crest and rather long tail. It is slightly smaller than those already mentioned, mostly grey in colour, with the usual iridescent colours on the wings and blackish bars on the smaller wing-coverts. I found Crested Doves very attractive aviary birds, breeding freely and producing two or three couples of young in the year. Their only drawback is that the sexes are so very much alike that it is not easy to be sure of a true pair, though the cock is perhaps slightly the larger.

All of the Bronzewings have a very rapid flight, but I think the Crested would beat any of the others in a speed contest, and the flight is accompanied by a distinctive whistling sound. As the bird perches on a branch it bows its body forward and throws up its tail in a very engaging gesture.

Before the first world war Crested Doves were kept at liberty by the Duke of Bedford, at Woburn Park, where they thrived and multiplied, but I fear they entirely died out during the war, no doubt owing to the attention of hawks and owls in the absence of keepers. We once tried to establish them at liberty in the London Zoo, several members of the Avicultural Society forming a committee to raise funds for their purchase. The Duke of Bedford, grandfather of the present Duke, took a great interest in the scheme, and presented us with ten pairs, and we were able to collect in all about twice that number, as well as a few of other species of doves. They were for the time being kept in the pheasantry near the present Bird House ; the first lot liberated on the 1st May, 1907, and the remainder a week or so later. They remained very happily in the Gardens, where they were regularly fed, becoming very tame and greatly admired, and the first summer many of them nested in the trees, some taking up their abode in the Botanical Gardens. I spent the winter in Australia, and on my return the following summer found the number of Doves had been sadly reduced. The opinion of the keepers was that they

Copyright] [D. Seth-Smith

Partridge Bronzewing or Squatter Pigeon (*Geophaps scripta*).

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Smith's Partridge Bronzewing (*Geophaps smithii*).

To face p. 112]

Copyright] [D. Seth-Smith

Crested Pigeon (*Ocyphaps lophotes*).

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White-bellied Plumed Ground Dove (*Lophophaps leucogaster*).

To face p. 113]

had fallen victims to Tawny Owls which were, and are still, numerous in the London Parks, and readily pick off birds such as doves when most of the trees are devoid of leaves. Mr. Ezra had similar trouble when he attempted to establish Indian Turtle Doves at liberty in Surrey.

There are certain species of Bronzewings that are entirely terrestrial, rarely if ever perching on trees. Of these I have kept three, the two so-called Partridge Bronzewings and the Plumed Ground Dove. They inhabit the drier parts of the country which the Australians call Spinifex country, where the dry ground is interspersed with clumps of spinifex grass and rocks. The nests, formed of a few sticks or bents, is placed on the ground and the young, covered at first with brownish down, are said to mature very quickly and to be able to run at an early age. The Partridge Bronzewing or Squatter Pigeon (*Geophaps scripta*) occurs on the plains and in open timbered country in Queensland, New South Wales, and the drier parts of South Australia, and is said to behave rather like a Quail when approached by running and " squatting " instead of flying off like most pigeons. It is a plump bird, valued in Australia as a table delicacy, but a handsome addition to any aviary, being clothed in brown and grey with contrasting white and black markings on the head and throat, the naked skin surrounding the eyes is blue, and the wing-coverts and secondaries shining greenish-purple. In my aviary I had three of these birds, but was never able to determine their sex, and they showed no sign of breeding.

Smith's Partridge Bronzewing (*Geophaps smithii*) comes from the hot northern parts of Australia, but is very similar to the last in its habits. Its plumage is mostly brown above, reddish on the chest, and white on the flanks and underparts. The wings are ornamented with rich greenish-purple and the large patch of naked skin surrounding the eyes is red. I possessed three or four of these uncommon pigeons at one time, but found them uninteresting as they squatted together on the ground and were all exactly alike, giving no indication as to their sex, and they did not attempt to breed.

Another species that I always hoped, but was unable, to obtain was the Harlequin Bronzewing or Flock Pigeon (*Histriophaps histrionica*), which is one of the most brilliantly coloured of the Bronzewings, and at one time was to be met with in immense flocks in the hotter parts of Northern and Central Australia. Its habits are somewhat akin to those of Sandgrouse, but from all accounts, since the introduction of sheep-farming, the species has become scarce. I have never seen a living example, but perhaps some of our Australian members may have kept it, and be able to let us know about it as an aviary bird.

The smallest and, I think, most desirable of these ground-frequenting Bronzewings, is the Plumed Dove, *Lophophaps*, of which there are two

or three races. Probably the only one that has been imported is *L. leucogaster*, the White-bellied Plumed Ground Dove, a bird of the hot desert country of Northern and Central Australia. Plump and quail-like in shape, its head carries an upstanding crest, its eyes are surrounded by a large patch of bare red skin, bounded above and below by a line of black. The prevailing colour of the plumage is reddish sand-colour, relieved by bars of black and grey, a pure white abdomen and band across the chest, while the wings are decorated with iridescent purple-bronze.

This is a lovely little dove, a pair of which I regarded as one of the greatest prizes in my aviary. They were very tame and the cock would bow and coo to the hen close to my feet. She made a nest of a few pieces of dry grass beneath a tuft of grass, and laid two white eggs, but declined to sit properly. The English climate is, no doubt, too damp for these birds, which delight in the hot sun and desert-like conditions of their native land ; but no birds were more charming while they lived with me.

* * *

DISPOSITIONS OF MANDARIN AND CAROLINA DUCKS OF INTEREST TO BIRD-LOVERS RATHER THAN TO BIRD-SCIENTISTS

By Evelyn Wicks (St. Leonards-on-Sea, Sussex, England)

Some fifteen years ago I bought a pair each of Mandarins and Carolinas. These adult birds were never friendly, and always remained shy and extremely nervous and eventually escaped.

Two years ago I decided to start from scratch, and after great difficulty procured some eggs, which duly hatched out. I opened the incubator to remove the ducklings, and had my first surprise. The Carolina ducklings jumped fully 3 feet, and continued jumping these long distances, until I managed to gather them up. The Mandarins stayed quite quietly in the drawer. I placed the ducklings in quite a small container, heated with a Putnam lamp, and also gave them a small wire run, water to drink, grit, and food. After twenty-four hours, I placed a shallow container about 2 inches deep and 15 inches diameter, for them to bath in, and they loved it, but quickly returned to the warmth of the heater, between baths. I had to increase the size of the water bath frequently as the birds grew. They had long, very fluffy tails, and I was interested to note that as the tails grew into quills the fluff remained at the tip of the quills until they were fully grown, and then dropped off.

Always the Mandarins were friendly and extremely curious of everything going on, but the Carolinas remained timid. As the birds grew, I needed more space and made a small cement pond about 6 feet by 3 feet, very shallow at one end for easy exit. I placed 2-foot wire netting around a space some 42 feet long by 14 feet wide (but they could well do with less space). All went well until one day a cat sat outside the wire watching them, and they became frantic, dashing against the opposite side, endeavouring to escape, and causing their beaks to bleed. I now decided to cover in the pen completely with 6-foot half-inch wire netting at the side, and also a two-inch netting overhead. The *extreme intelligence* of these little birds was immediately apparent. The next time the cat appeared they ignored her. This, I think, is truly amazing, and it does seem incredible that they could realize their secure position, when the security was only man-made.

I had a small shelter in the pen, and shut the ducks in at night. However, as soon as they grew their flights and could fly, they refused to be shut up any longer. Whenever I sat in the pen watching them, they would nibble at my shoelaces and were quite friendly.

The next stage was when the drakes assumed their glorious winter plumage. The Mandarins were intensely proud ; so much so that they now jumped on to my lap and it was a delight to have three Mandarins puffing out their chests in such pride and vanity, at such close quarters and to be able to examine them so minutely. Sometimes two would fly on my shoulders and proceed to battle across my face. In their battles they never hurt each other, and the only way they seem to be able to do any real harm is on the water. I once rescued the Carolina drake from being drowned by three Mandarin drakes, but that's another story in itself, which I will later tell at length.

One little Carolina duck has been most friendly, perhaps because of my persistance. I did love her so, and always picked her up from the day she was hatched. She got more or less used to it ; at least to the extent that if she decided I might fondle her, she perched in a particular place on an old tree stump, and called out with a special note, which she keeps only for me. It's loud and full. I could then pick her up, and she would run her beak through my hair most affectionately. I could not pick her up from any other place.

As soon as the birds were in full plumage they paired off. Two Mandarin drakes chose two Mandarin ducks (or was it *vice versa*?), and the third Mandarin drake (whom I will call " No. 3 ") decided he wanted the Carolina duck, and then the fun, or should I say trouble, started. The Carolina drake wanted his legitimate mate, and so the three birds were always together, the two drakes always bickering. The odd Mandarin duck was quite prepared to mate with the Carolina drake, but he just did not want her. The two correctly paired Mandarin drakes were on the side of law and order, and

refused to allow the oddly matched pair to get on to the water, although they did manage to get the pond to themselves when the rest of the birds were out preening, and mating took place.

This state of affairs persisted for nearly two months, when the Carolina drake at last decided to put up with second best and mate with the Mandarin duck. Now fresh trouble occurred. The two respectable Mandarin drakes were as much opposed to this odd match as to the other one. They turned against the Carolina drake (with whom they had always been most friendly) and decided to drown him, " No. 3 " helping. When I rescued him, he was quite exhausted, and I held him for about ten minutes before he recovered.

It was at this period that I discovered something most interesting, and something I had not noticed before, although I have been a life-long bird lover. The Carolina drake was now nervous of getting on the water and, in fact, the three Mandarins would not allow him on. I therefore stood at the water's edge, kept the Mandarins off, and allowed the Carolina to get his fair share. My discovery was, that if you looked directly at the bird you were talking to, he knew, and also all the other birds knew. This led to a new joy in my birds. " No. 3 " is a great pet, and will nearly always fly to my shoulder when I enter the pen, and if I put my hand up, will step daintily on to it. Sometimes, if he felt like it, he would ignore me, and then I would look directly at his rival, the Carolina drake, talking affectionately to him. Immediately " No. 3 " would fly to my shoulder, pecking at me in great fury, and puffing out his chest in great indignation, whereupon I could not help laughing, and this only added to his fury.

Mandarins are not fertile in their first year, and the ducks usually lay only one infertile egg. The Carolina duck laid three clutches of eggs (thirty in all). These were all infertile owing to the immaturity of the Mandarin drake (" No. 3 ") who mated her. When the duck was on the nest, " No. 3 " would rush the length of the pen, attacking me with great fury.

The last stage is the only one that is not agreeable. The drakes started to lose their fine feathers, and looked ragged and miserable. They were no longer friendly, but moped as all moulting birds do. However, this did not last long, and soon the new feathers arrived, which are much the same colour as those of the ducks ; but quite quickly one can see the colour starting to come back, and the day the first Mandarin flew to my shoulder once again, was another red letter day.

Once again the " Eternal Triangle " has appeared, and I am now waiting to see which drake wins the affections of the Carolina duck this year. I don't think she minds much either way, if only the drakes could settle their dispute. If she is too nice to the Carolina

drake, "No. 3" attacks her with great gusto, swinging her round with one of her wings and making her squawk for mercy.

The little Mandarin duck is still tagging along after the Carolina drake, and really loves him with Mandarin constancy.

* * *

PSITTACINES THE WORLD OVER

By Alan Lendon (Adelaide, S. Australia)

In the course of a trip around the world, extending from August to December, 1953, I was privileged to see many collections, both public and private, and I felt that a record of the various parrot-like birds that I saw would not only be of interest, but might assist members in the mating up of rarities. My records of Australian species, especially the more common ones, are relatively sketchy, as they naturally did not impress themselves on my mind as much as unfamiliar ones did.

Keas (*Nestor notabilis*) were seen in several collections, but I was disappointed not to see a Kaka (*N. meridionalis*) anywhere, as it is a bird that I have never seen in life.

I saw many Lories that were new to me, some of them most attractive. The strange Black Lory (*Chalcopsitta ater*) was on exhibition at both Regent's Park and Wassenaar, whilst of the genus *Eos*, both the Ceram (*E. semilarvata*) and Wallace's (*E. squamata*) were in the Rotterdam Zoo, the Violet-necked (*E. variegata*) and the Red (*E. bornea*) were at Wassenaar, whilst David West, jr., and Rayson Brown also had the last-named in Los Angeles. Rayson Brown also had several of the very unusual-looking White-rumped Lories (*E. fuscata*), and West, jr. also had the Black-winged (*E. cyanogenia*).

Of the genus *Domicella*, the Black-capped (*D. lory*) was at Rotterdam the Purple-capped (*D. domicella*), the Chattering (*D. garrula*), and the Yellow-backed (*D. flavo-palliatus*) at Wassenaar, and R. C. J. Sawyer also had a nice pair of the last-named.

Turning to the Lorikeets, the two common Australian species, the Rainbow (*Trichoglossus moluccanus*) and the Red-collared (*T. rubritorquis*) were at Wassenaar, as well as at many other places. Other members of the same genus noticed were the Blue-faced (*T. haematodus*), Forsten's (*T. forsteni*), and the Ornate (*T. ornatus*), all at Wassenaar, and the last-mentioned was seen by me for the first time in a Singapore dealer's possession. Karl Plath had the delightful little Goldie's Lorikeet (*Glossopsitta goldiei*) breeding at the Brookfield Zoo, Chicago, and the Scaly-breasted (*Eutelipsitta chlorolepidota*) was noted at Wassenaar and elsewhere.

The only long-tailed Lories seen were both colour phases of Stella's

(*Charmosyna stellae*) in Taronga Park Zoo, Sydney, and Sir Edward Hallstrom had several Musschenbroek's (*Neopsittacus musschenbroekii*) and a single Alpine Lorikeet (*N. pullicauda*). Rayson Brown had several remarkable looking birds which I judged to be hybrids between the Violet-necked (*E. variegata*) and the Rainbow (*T. moluccanus*).

The only Fig Parrots seen were at Sir Edward Hallstrom's, where there were a large number of the Double-eyed (*Opopsitta diophthalma*), and a few Edwards' (*O. edwardsii*).

Of the Macaws, the Hyacinthine (*Arodorhynchus hyacinthinus*) was fairly common, Edinburgh Zoo having four particularly fine specimens. The only Glaucous (*A. glaucus*) that I saw were three in the Antwerp Zoo and one at Wassenaar, while R. C. J. Sawyer's Lear's (*A. leari*) was the only one seen in Europe, although three were exhibited in the Brookfield Zoo. Spix's Macaw (*Cyanopsitta spixii*) was represented by a very elderly bird at Regent's Park, a lovely specimen in the Antwerp Zoo, and two shockingly plucked birds in the Boston Zoo. Blue and Yellow Macaws (*Ara ararauna*) were common, and Rayson Brown had a breeding pair ; Scarlets (*A. macao*) and Maroons (*A. chloroptera*) were also well distributed, Rayson Brown also having a breeding pair of the latter. The Military (*A. militaris*) was also fairly plentiful, and I saw the Severe (*A. severa*) for the first time on the Continent, it being represented in the collections at Antwerp, Rotterdam, and Wassenaar. Illiger's (*A. maracana*) was at Wassenaar, and the bird at Antwerp that I took to be this species, was said not to be so, and was presumably therefore Coulon's (*A. couloni*). E. N. T. Vane's Noble Macaws (*Diopsitta nobilis*) were a new species to me, and their progeny were to be seen in several other English collections.

The Conures were, in many instances, new to me, and provided many headaches in regard to identification. The Red-masked (*Aratinga rubrolarvata*) was only seen at Regent's Park, and big green ones with red flecks were called Gundlach's in Antwerp, Green-shouldered at Wassenaar, and Mona Island by Rayson Brown and if, as I think, they were all the same species, they were probably Mauge's (*A. maugei*). A similarly marked, smaller bird was also labelled Green-shouldered by Wassenaar (whose identifications were frequently faulty), and I regarded it as the Cuban (*A. euops*). A. A. Prestwich and Wassenaar both had the Cactus (*A. cactorum*). The Blue-crowned (*Thectocercus haemorrhous*) were in Regent's Park and Antwerp Zoos, and in Sir Edward Hallstrom's collection, and Rayson Brown was breeding them under the impression that they were Noble Macaws.

Queen of Bavaria's Conures (*Eupsittula guarouba*) were commoner than I had expected, Mrs. Clark of Bromsgrove having bred several, I think. The attractive Yellow-headed (*E. jendaya*) was very plentiful in England, was also at Wassenaar and Antwerp, and was being bred by Rayson Brown in Los Angeles, and the even nicer Golden-headed

(*E. auricapillus*) of which I am unable to discover an adequate coloured plate, was represented by four specimens in Antwerp and two more at Wassenaar.

The true St. Thomas (*E. pertinax*) was represented by a single bird at Brookfield, and Karl Plath believes it to be very rare, whilst the birds thought at that time by Regent's Park and A. A. Prestwich to be the St. Thomas were, I feel sure, the Yellow-cheeked (*E. chrysophrys*). The Brown-throated (*E. aeruginosus*) was in the Wassenaar collection and at the San Diego Zoo, and I think Mrs. Clark may have had them also; Rayson Brown had Petz's (*E. canicularis*) and was breeding the Golden-crowned (*E. aureus*); there was a solitary Aztec (*E. astec*) in the Bronx Zoo, New York, and A. A. Prestwich had the only Weddell's (*E. weddellii*) that I saw anywhere.

San Diego Zoo had a single specimen of the attractive, macaw-sized, Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*). Black-headed Conures were not very uncommon, being at Regent's Park and Rotterdam, and in Rayson Brown's collection, whilst the Patagonian Conures which I saw at Whipsnade, Alfred Ezra's, and Wassenaar (where they were labelled Rock Parrakeet—*Neophema petrophila !*) were, I think, the Lesser (*Cyanoliseus patagonus*) as opposed to the Greater (*C. byroni*), of which Sir Edward Hallstrom had two. Sir Edward also had a single Slight-billed Parrot (*Enicognathus leptorhynchus*), and several Chilian Conures (*Microsittace ferruginea*), neither of which I saw elsewhere.

Of the attractive genus *Pyrrhura*, there were three of the very lovely Red-eared (*P. cruentata*) at Wassenaar, where there was also a single specimen of the delightful little Crimson-bellied (*P. rhodogastra*). Both A. A. Prestwich and Sir Edward Hallstrom were breeding the Red-bellied (*P. vittata*), which E. N. T. Vane also had. The White-eared (*P. leucotis*) Vane also had, as did Antwerp and Wassenaar, and it was being bred by Rayson Brown. Wassenaar also exhibited what they called the Brown-eared, which I think was Lucian's (*P. lucianii*).

Quaker Parrots (*Myiopsitta monacha*) were not uncommon, and Wassenaar had one and J. Bruyneel of Regie, near Brussels, two of an attractive blue mutation. Lineolated Parrakeets (*Bolborhynchus lineolatus*) were at Wassenaar, were later bred by A. A. Prestwich, and were also being bred by Rayson Brown.

Parrotlets I found difficult to identify, there being birds of this genus in the Boston Zoo and at Wassenaar. Spengel's (*Forpus spengeli*) was represented at Brookfield Zoo. The genus *Brotogerys* was almost entirely new to me. A. A. Prestwich had both the Yellow-winged (*B. chiriri*) and the Golden-winged (*B. chrysopterus*), and the latter was also at Wassenaar. The Tovi (*B. jugularis*) was at San Diego and in Rayson Brown's collection.

Most Zoos and many private collections had Amazons with many

of which I was unfamiliar and of some of the identifications of which I felt suspicious. There was a lovely pair of Vinaceous (*Amazona vinacea*) in Boston, and another in the Bronx ; the large Guatemalan (*A. guatemalae*) was at San Diego and the Mealy (*A. farinosa*) was seen at Bellevue, Rotterdam, Antwerp, and San Diego. The Orange-winged (*A. amazonica*) was at Regent's Park and Clifton ; the Blue-fronted was plentiful and included the Duke of Bedford's aged and nearly blind lutino ; the Yellow-shouldered (*A. ochroptera*) was at Clifton ; the Yellow-headed (*A. ochrocephala*) at Regent's Park and Keston and the Yellow-naped (*A. auropalliata*) also at Regent's Park. Levaillant's (*A. levaillantii*) was noted at Boston and Regent's Park, the rare Dufresne's (*A. dufresniana*) only at Clifton, and the variously designated Red-crowned, Red-fronted, or Red-topped (*A. rhodocorytha*) was at Regent's Park, Antwerp, Wassenaar, Edinburgh, and Rayson Brown's. Green-cheeked (*A. viridigena*) were seen at Bellevue and Brookfield ; Finsch's (*A. finschi*) in San Diego ; Yellow-cheeked (*A. autumnalis*) at E. N. T. Vane's and Regent's Park, where there was also the closely related Salvin's (*A. salvini*). Festives (*A. festiva*) were at Regent's Park, Clifton, and Antwerp ; two pairs of the very attractive White-browed (*A. albifrons*) were in Rayson Brown's collection, and the rare Salle's (*A. ventralis*) was at Regent's Park. Sir Edward Hallstrom had Cubans (*A. leucocephala*), as also did Keston and Boston, and Regent's Park had both the Red-throated (*A. collaria*) and the Active (*A. agilis*), and Rayson Brown also had the latter.

I found the genus *Pionus* an attractive one. Sir Edward Hallstrom had a Red-vented (*P. menstruus*), and this species was also in the Clifton, Antwerp, and San Diego Zoos. The nice Little Dusky or Violet (*P. fuscus*) was at Regent's Park and Clifton, and A. A. Prestwich and Antwerp had Maximilian's (*P. maximiliani*). The closely allied Hawk-headed Parrot (*Deroptyus accipitrinus*) was at Regent's Park, Edinburgh, Antwerp, Wassenaar, and R. C. J. Sawyer's. A single rather decrepit Red-capped (*Pionopsitta pileata*) was in the Antwerp Zoo, and A. A. Prestwich had White-bellied Caiques (*Pionites leucogaster*).

Dealing next with the African parrots of the genus *Poicephalus*, J. Bruyneel had Jardine's (*P. gulielmi*), and A. A. Prestwich had the Brown-headed (*P. fuscicapillus*). Senegals (*P. senegalus*) and the closely-allied Orange-bellied (*P. versteri*) were also in A. A. Prestwich's collection and at Regent's Park. The only Meyer's (*P. meyeri*) noticed were at Sir Edward Hallstrom's, and A. A. Prestwich's collection.

Grey Parrots (*Psittacus erithacus*) were numerous everywhere, and I was delighted to see specimens of the Timneh (*P. timneh*) at Antwerp, Regent's Park, and in Wilfred Frost's possession. The only *Coracopsis* that I saw was an example of the Lesser Vasa (*C. nigra*) at Sir Edward Hallstrom's. Examples of the extraordinary Pesquet's Parrot

(*Psittrichas pesqueti*) were to be seen at Taronga Park and at Wassenaar. A fair number of Red-sided Eclectus (*E. pectoralis*) and a few Grand (*E. roratus*) were seen.

The genus *Psittacula* was widely spread. Alexandrine Parrakeets (*P. nipalensis*) were not very numerous, the almost pure-bred yellow at Keston was very striking. Ring-necked Parrakeets (*P. torquata*) were ubiquitous and yellows were well distributed, whilst the only blues were those of the Duke of Bedford and David West, jr. The only African Ringneck (*P. krameri*) that I saw was a cock at Regent's Park. Blossom-heads (*P. cyanocephala*) must have been imported into England in large numbers during the brief lifting of the parrot ban, as they were in most English collections, and both the Duke of Bedford and Keston had yellow cocks ; Rayson Brown had the only Plum-heads (*P. rosa*) that I saw. The only Layard's (*P. calthropae*) were a few immatures at Keston, and the Duke of Bedford had a solitary hen Malabar (*P. peristerodes*). I saw only two Derbyans (*P. derbyana*), both cocks, in England ; they were at Regent's Park and at Mrs. Clark's ; however, Rayson Brown had five in Los Angeles, and they were breeding. I saw E. N. T. Vane's Moustache Parrakeets (*P. fasciata*) with their recently fledged young one, and there were a few at Wassenaar ; the only Javan (*P. alexandri*) was at Regent's Park. It was quite a thrill to see my first Long-tailed Parrakeet (*P. longicauda*) at the Bellevue Zoo, Manchester.

Barraband's Parrakeet (*Polytelis swainsonii*) was plentiful in U.K., but few were seen in U.S.A. ; Rock Pebblers (*P. anthopeplus*) did not seem numerous anywhere, whilst Queen Alexandra's (*P. alexandrae*) were widely represented. I did not notice many Australian Kings (*Aprosmictus cyanopygius*), but Alfred Ezra had several New Guinea Kings (*A. chloropterus*), and Regent's Park had a pair. Australian Crimson-wings were widespread, but I only saw three, all cocks, of the Timor species (*A. jonquillaceus*), two at Regent's Park, and one at Manchester.

As regards Lovebirds, A. A. Prestwich had a large number of Red-faced (*Agapornis pullaria*) and six Abyssinian (*A. taranta*), and Rotterdam had at least forty of the latter species. I did not keep particular note of the five formerly free-breeding species, but I formed the opinion that at least two of them were now quite uncommon, and I did not see a Madagascar (*A. cana*) anywhere. The blue mutation of the Masked (*A. personata*) was fairly plentiful in U.K., and numerous in U.S.A. ; I saw only a few yellow Nyasas (*A. lilianae*) and David West, senior, had a blue Fischer's (*A. fischeri*). Hanging Parrots (*Coryllis*) I found impossible to identify ; there was one at Wassenaar and two at Chessington.

Of the Rosellas, the Crimson (*Platycercus elegans*) was plentiful, and A. A. Prestwich had a pair with newly-fledged young in semi-mature

(red) plumage. Only a few Adelaides (*P. adelaidae*) were seen, and the only Yellows (*P. flaveolus*) were at Wassenaar, and those of D. West, jr. Green Rosellas (*P. caledonicus*) were seen only at Regent's Park and at Wassenaar. Pale-headed (*P. adscitus*) were common both in Europe and in America, as were Eastern (*P. eximius*) and Golden-mantled (*P. splendidus*). I saw a few Northern Rosellas (*P. venustus*) both in Europe and in the States, whilst Western (*P. icterotis*) seemed very plentiful in England, and relatively rare in U.S.A.

The Pileated Parrakeet (*Purpureicephalus spurius*) was surprisingly common in England and rare in America. Of the Ringnecks (*Barnardius*), the Mallee (*B. barnardi*) was more plentiful in U.S.A. than in Europe, and the only Cloncurry Ringnecks (*B. macgillivrayi*) seen were at Sir Edward Hallstrom's. Twenty-eights (*B. semitorquatus*) were only seen at Wassenaar and San Diego and Port Lincolns, (*B. zonarius*) were also quite scarce ; I thought one bird in the Parrot House at Regent's Park was probably the north-western form of the latter (*B. occidentalis*).

As regards Blue-bonnets, I noticed the Yellow-vented (*Psephotus xanthorrhous*) at E. N. T. Vane's, J. Bruyneel's, and at several places in U.S.A., while the only Red-vented (*Ps. haematorrhous*) was at San Diego, and the Duke of Bedford had two hens of the rare Little (*Ps. narethae*). Extremely few Hoodeds (*Ps. dissimilis*) were seen, I remember noticing a cock at Wassenaar, but both Many-colours (*Ps. varius*) and Red-rumps (*Ps. haematonotus*) were common, especially in Europe. I did not see as many yellow Red-rumps as I had anticipated.

Turning now to the Grass Parrakeets, Bourkes (*Neophema bourkii*) were common everywhere, as also were Elegants (*N. elegans*). The only pair of Blue-winged (*N. chrysostoma*) that I saw were in Mrs. Clark's collection at Bromsgrove, and there was a solitary Rock (*N. petrophila*) at Wassenaar. Turquoisines (*N. pulchella*) surprised me by their abundance, and were breeding at Wassenaar, and Splendids (*N. splendida*) were fairly numerous in U.S.A. and increasing in U.K.

A solitary Swift Parrot (*Lathamus discolor*) was seen at Wassenaar, and Budgerigars (*Melopsittacus undulatus*) were ubiquitous, with their mutations becoming progressively less attractive, at any rate to my untrained eyes !

As a result of my tour, I have now seen all but one of the recognized species of Cockatoos in life. Palm Cockatoos (*Microglossus aterrimus*) were at Taronga Park, Regent's Park, San Diego, and in the possession of David West, senior, in Los Angeles. Red-tailed Blacks (*Calyptorhynchus banksii*) were at Wassenaar, Regent's Park, and San Diego, as well as at Sir Edward Hallstrom's in large numbers and in this collection also were seven examples of the rare Glossy Black (*C. lathami*). Sir Edward also had numerous White-tailed Black (*C. baudinii*) and

Yellow-tailed Black (*C. funereus*) and the latter were also at Regent's Park and Wassenaar. Gang-Gangs (*Callocephalon fimbriatum*) were breeding at the Duke of Bedford's, and were also at Mrs. Clark's and J. Bruyneel's.

The Greater Sulphur-crested (*Kakatoe galerita*) was everywhere, and the Triton (*K. triton*) was in Taronga Park and Regent's Park and, I think, at Rotterdam, although these seemed rather small. Citron-crested (*K. citrino-cristata*) were at Keston, Wassenaar, and Regent's Park, Lesser Sulphur-crested (*K. sulphurea*) at Keston, Regent's Park, Clifton, and the Bronx, and Dwarf Sulphur-crested (*K. parvula*) at Regent's Park and Dudley. Leadbeater's (*K. leadbeateri*) were in most collections, White-crested (*K. alba*) at Regent's Park, and J. Bruyneel's, Salmon-crested (*K. moluccensis*) at Regent's Park, Wassenaar, R. C. J. Sawyer's, and J. Bruyneel's, and the Blue-eyed (*K. ophthalmica*) was represented at Regent's Park and was breeding at Sir Edward Hallstrom's.

The Bare-eyed (*K. sanguinea*) was not uncommon, Rayson Brown having a breeding pair; Ducorps' (*K. ducorpsii*) was at Taronga Park and at Whipsnade, and I saw Goffin's (*K. goffini*), new to me, at Whipsnade, Dudley, Wassenaar, and the Bronx. I had expected to see the Red-vented (*K. haematuropygia*) in U.S.A., but did not meet it anywhere, though Wassenaar's Goffin's was labelled thus. The Slender-billed Cockatoo (*K. tenuirostris*) was at Regent's Park and at San Diego, and the Western Slender-billed (*K. pastinator*) was also at Regent's Park, though here the two labels were reversed. Galahs (*K. roseicapilla*) were numerous, as also were Cockatiels (*Leptolophus hollandicus*), but I missed the white mutation of the latter in California.

* * *

MIXING THE LARGER BIRDS

By D. H. S. Risdon (Dudley, Worcs., England)

Many people, when they start keeping birds, have visions of huge aviaries containing mixed collections of species all flying happily together, to the great delight of their owner. This is a dream which can seldom be realized in practice, as most of the bigger kinds of birds are too pugnacious to agree together. One can, however, go quite a long way towards realizing this dream, first by sticking to males only or, secondly, mixing only those species which are so different from each other that there is no rivalry.

This is not an article for the systematic breeder of birds. There is no doubt whatever that where good breeding *results* are required, the best rule is one pair per aviary. I am thinking now in terms of birds of the size of Cardinals and upwards, most of which get very aggressive when in breeding condition.

I am a great lover of really large aviaries. In my opinion they are the only ones which are really an ornamental adjunct to a garden, especially if the framework is of larch poles with the bark left on, which to my mind blends so much more with the surroundings than sawn timber or metal.

With these ideas in mind, I built myself an aviary 50 feet long and 15 feet wide, with a larch pole framework, and as I intended to keep the larger kinds of birds I used one-inch mesh wire netting instead of the usual half-inch. I have discovered, in practice, that birds of the size of a House Sparrow and upwards cannot get through one-inch mesh. Moreover, once the bright galvanizing has toned down, the wire is hardly noticeable, and your view of the birds is almost uninterrupted. One-inch mesh will exclude rats but not, of course, mice, nor such marauders as weasels, but it has been my experience that it is almost impossible to keep mice out of very big aviaries anyway. The solution to that problem is to make your nest-boxes and feeding arrangements mouse-proof *inside* the enclosure. As the aviary was only intended for use during the summer months, the usual closed-in shelter was dispensed with. The whole structure is built against a brick wall, and along that side I have provided a 2 foot overhang of asbestos sheet, which gives ample shelter from wind and rain. The aviary is, of course, planted and turfed. A great advantage in constructing the framework of natural larch poles is that besides being ornamental they require no maintenance. They will stand for many years without any attention, and when they do rot can be easily and cheaply replaced. As a matter of interest to those who contemplate erecting such a structure, the total cost of this aviary, including materials and labour, was approximately £40, a price which, I think, compares very favourably with much smaller aviaries made of more expensive materials.

This aviary has given me a great deal of pleasure, as the space gives the birds plenty of room in which to fly about and disport themselves in a way they can never do in small enclosures. In other words, one has the opportunity of seeing what birds can do and studying their behaviour, besides just seeing what they look like. Personally, I would rather have a few pairs kept under these conditions than a larger collection housed in rows and rows of small, unattractive aviaries, but that, of course, is entirely a matter of personal inclination.

Last year I successfully kept the following species together from April until October: White-crested Jay-Thrushes, Long-tailed Glossy Starlings, Bleeding-heart Pigeons, Red-crested Cardinals, Virginian Cardinals, Pennant's Parrakeets, Ring-neck Parrakeets, and an odd Cockatiel.

At the beginning of the season I also included a pair of Blue Whistling Thrushes, but these had to be hastily removed when one was caught

trying to murder a Cardinal. I also tried a Blue-cheeked Barbet, but for some curious reason the Pennant's took a violent exception to this bird, chasing it to the ground and pouncing on it like a couple of hawks, so this had to be removed also.

I introduced the Pennant's and Ring-necks with some trepidation, knowing the aggressive nature of parrakeets towards each other, but they settled down very well and, apart from minor bickering, there was no serious trouble.

The Pennant's went to nest and reared two very fine youngsters. It is interesting to note that this same pair for the previous two breeding seasons, when they were housed in one of the Zoo aviaries in their own compartment, on both occasions hatched young, but let them die at about a week old. One thing was very noticeable. Whilst they were prospecting for a nesting site and during the time that the hen was preparing the nest, both birds were more aggressive than at any time throughout the rest of the season. Once the hen started to incubate the cock became extremely quiet, sitting up under one of the overhead shelters near his wife's nest-box. When the hen came off for exercise, both birds would fly from end to end of the aviary, and it was a beautiful sight to see this lovely parrakeet really get going on the wing.

The Ring-necks were very quiet to start with, but I think this was largely due to the fact that the cock was a young bird and had only just acquired his pink ring. Later on in the summer he began to throw his weight about a bit more, and so did the hen who, by the way, is a lutino. They both spent the early part of the summer moulting, and came into breeding condition in August, when the hen took to a nest-box. By this time the Pennant's had reared their family, and I thought would have had no further interest in breeding. There were four or five nest-boxes at different points in the aviary, and although things had been quiet enough throughout the summer, as soon as the hen Ring-neck decided to set up house the Pennant's seemed to think they had the prerogative of all the nest-boxes. Although they did not want one themselves, they took exception to the hen Ring-neck's right of entry. There was then a good deal of bickering between both pairs, but as it was too late in the season for serious breeding, I did not bother much, and there was no serious fighting.

I had rather expected that the parrakeets would do a lot of damage to the growing bushes and plants, but they did surprisingly little, possibly because in a large aviary they were able to take more exercise and had other things to occupy their minds. The parrakeets took absolutely no notice of the other birds, nor they of them.

I think one of the advantages of a mixed aviary is that all the birds get a greater variety of food which their owner would not normally think of giving them. For instance, the parrakeets often ate oranges

and bananas put in for the softbills, and I frequently saw them at the pot containing insectivorous mixture. We have a mixed aviary in the Birdhouse at Dudley Zoo, and I have actually seen a Virginian Cardinal eating chopped-up raw meat put in for a Sun Bittern, to give an example of the different and unlikely foods which birds will eat given the chance.

The White-crested Jay-Thrushes I have already written about in a previous article. They certainly provided the comic element in the aviary, both with their amusing antics and laughing calls.

The Cardinals were no trouble at all. Being the smallest birds in the aviary they could hardly be otherwise, but the bigger birds ignored them.

The Cockatiel is a tame pet who spends his summer in the aviary and the winter in a cage indoors. I gave him a mate to see if he wanted to breed, but he obviously did not recognize her as such, and much preferred human company when anyone was about. Oddly enough, he took to a nest-box and spent many hours therein, furiously guarding it against all comers including, even, the Pennant's who retreated somewhat nonplussed from his onslaughts if they came too near. I eventually removed the hen, as she looked somewhat disconsolate, poor thing! All she ever got from "Joey" was "Pop goes the Weasel", which is his favourite tune. "Joey" also used to infuriate the Ringnecks by playing "Peeping Tom" when they were courting, leaning over the edge of the roof of one of the shelters and watching them intently, while the cock was stamping the perch and feeding the hen.

The Long-tailed Glossy Starlings proved to be very harmless birds, and looked most lovely in the sunshine, flying the full length of the aviary with their long tails trailing behind them.

The Bleeding-heart Pigeons, of course, gave no trouble. In any case, it is generally recognized that birds of the dove and pigeon family are good mixers with other genera.

To those interested in trying a mixed collection of the larger birds on the above lines, I would say there are two rules to be observed. The first is to supply a really large aviary. I would not have attempted to mix, for instance, Jay-Thrushes with Cardinals in an aviary of less dimensions than this one. I think that provided there is sufficient space for the birds to get away from each other there is no cornering and bullying. The second rule is, of course, to mix species from entirely different genera. Most fighting occurs through rivalry, but there is no competition between birds whose habits and temperament and requirements in the way of nesting sites are different. If you have alternate indoor accommodation for use during the winter, there is a lot to be said for a summer aviary of this type. For one thing, you can bring your birds inside during the cold weather which makes it

pleasanter, from your own point of view, looking after them, and for another it gives the ground and plants in the aviary a chance to be rested throughout the winter months.

* * *

BREEDING OF THE RED-SIDED ECLECTUS (*LORIUS PECTORALIS*) IN NEW ZEALAND

By W. G. BAIRD (Palmerston North, New Zealand)

This is an account of my breeding of the Red-sided Eclectus. It is the first time it has been bred here, in fact my pair, apart from two cock birds in one of the Zoos, are the only Eclectus in New Zealand.

I procured a pair in January, 1954, whilst on a visit to Australia. They were both bred late in 1953, having been not long out of the nest when I got them. I arrived back in New Zealand in February, with the birds, and they soon settled down in their new quarters, but within a month I lost the hen. It died for no apparent reason, showing none of the usual signs of sickness. That put me in a fix. I could not get a replacement from overseas as our authorities had seen fit to reimpose the parrot ban in N.Z., and at the time of writing there does not seem to be any prospect of it being lifted.

Here I must digress slightly. I knew of a hen Eclectus which a lady in my city had as a pet—she bought the bird for £50 from a naval sailor during the war years. He could not tell her the name of the bird, and she had no way of finding out. It was only through my visiting her neighbour in 1948 and hearing the bird call out that I discovered it. It was quite tame and would say a couple of words ; she had named it Bill, but when she found an egg in the bottom of its cage, she promptly changed its name to Whillemena. At that time I had never seen an Eclectus, so told the lady that I would see if I could find out what the species was, which I duly found in Caley's *What Bird is That ?*. Well, when my bird died, I thought I would see if the lady would sell me her bird, which she did, and it enabled me to have a pair again. I put them together, but they did not take any notice of each other. The hen had been kept in a cage, with the consequence it was wing stiff. I then put in a nest-box, four feet high, with the inside lined with wire netting. The box has an extension of a foot on the bottom, making it L-shaped, the extension being hinged to facilitate inspection. I put a layer of decayed wood on the bottom and it was no time before the hen was in the box. Next thing there were two eggs in the box. She sat tight, and after she had been sitting for a couple of weeks I managed to get the eggs out for testing with a strong torch ; they both proved clear, so my hopes were somewhat dashed. I removed the eggs and she immediately laid two more. This time one was fertile, which she hatched out, only to

let it die after three weeks, so my hopes were again dashed. She duly laid again, two more eggs, this time both were fertile, and the first chick hatched on 2nd February, followed by the second on 4th February, both eggs taking twenty-eight days to hatch. She sat tight on the chicks, only coming off for short periods to be fed by the cock. At this time she developed a very shrill call, and she used the same call all the time the chicks were in the nest. The cock bird made no attempt to go in the nest; he seemed to maintain a very indifferent attitude, as if to say: "well, I've done my part, the rest is up to you, old girl," but he was always ready to feed when she called him. I maintained a daily inspection and the hen did not object to my intrusion. Maybe it was on account of her being so tame through being a pet. The elder chick was in the box for 74 days before coming out, the second bird was 82 days, but they spent a few days looking out of the hole before deciding to come out into the world. The first chick was flying three days after coming out, the second came out on 25th April, and has not flown at the time of writing. Both chicks are cock birds, and nearly as large as their father.

The hen is now getting ready for another brood, as she is in the nest-box practically all the time. All I need to find out now to make the cycle complete, is whether the cock bird takes over the feeding of the young once they are out of the nest. To date I have not seen either parent feeding the young. The cock never went into the nest-box, but when I lifted the lid for inspection he was always close, and had a look in when I did. Neither parent objected to my regular visits to the nest. For feeding, I gave the birds a staple diet of sunflower seed, wheat, and plain canary seed, plus any suitable green food. Whilst feeding the young, in addition to the above, they were given peanuts, soaked raisins, banana, ripe pears, apples, silver beet, thistle, all kinds of seeding grasses, lettuce leaves, seeding dock, dock leaves, and the hen had a liking for the roots, and a weed known as "fat hen". I gave the birds as big a variety as I could procure, as I do not think that they would have reared the chicks without it.

The Eclectus always arouse interest in visitors to my aviaries on account of the contrasting colours of the sexes.

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Copyright] [*Fox Photos*

Miss E. Maud Knobel presenting a bouquet to the Duchess of Bedford.

To face p. 128]

Copyright] [*Cage Birds*

THE DUKE OF BEDFORD UNVEILING THE MEMORIAL PLAQUE.

[*To face p.*329

MEMORIAL TO THE TWELFTH DUKE OF BEDFORD

Early in 1954 it was decided, in response to numerous requests, to launch an appeal for funds for a Memorial to the late Duke of Bedford. A Committee was formed consisting of Mr. Alfred Ezra, President of the Avicultural Society, Miss E. Maud Knobel, Vice-President, Mr. E. J. Boosey and Mr. D. Seth-Smith, Vice-Presidents, and Messrs. B. H. Dulanty, S. Porter, A. A. Prestwich, J. J. Yealland, and R. C. J. Sawyer (Hon. Treasurer). Funds were asked for to provide an aviary for homing Budgerigars at semi-liberty in the Zoological Gardens at Regent's Park, London, and a Challenge Cup to be known as the "Duke of Bedford Memorial Trophy" for the best Parrot-like bird, to be competed for annually at the National Cage Bird Exhibition. The appeal met with a ready response from members of the Avicultural Society, and subscriptions were received from all over the world from people who wished to pay tribute to a very great aviculturist, and one who had done so much for the Society.

An aviary was duly erected in an open space near the Parrot House at the London Zoo, and before it was placed a plaque with the following inscription :—

Hastings William Sackville Russell
12th Duke of Bedford
1888–1953

Aviculturists all over the world have subscribed to present this aviary to the Zoological Gardens of London as a memorial to the 12th Duke of Bedford, a great naturalist and aviculturist.

On Monday, 18th April, the unveiling ceremony was performed by the present Duke of Bedford and was attended by the Duchess of Bedford, the Dowager Duchess of Bedford, Lord Hugh Russell and Lady Daphne Russell, Viscount Chaplin, Hon. Secretary of the Zoological Society, all members of the Appeal Committee except Mr. Ezra, Mr. Porter, and Mr. Prestwich, who were prevented by illness and bereavement from being present, and a large number of subscribers. All those attending met in the Fellows' Restaurant, where the Duchess of Bedford was presented with a bouquet by Miss Knobel, and the Dowager Duchess with a bouquet by Mrs. McGarry, sister of Mr. Sawyer, Hon. Treasurer of the Appeal Fund. The party then walked to the aviary, where Viscount Chaplin formally opened the proceedings, and was followed by Mr. Seth-Smith, who referred to the late Duke of Bedford's great contributions to aviculture, and in particular his success in establishing homing Budgerigars, and said how grateful they all were to his son for coming to unveil the memorial to his father, who they all held in such high regard.

The Duke of Bedford then replied : " Thank you for your kind welcome, and in particular thank you for the praise you have given to my father's contributions to aviculture. The unveiling of a memorial is, inevitably, a sad occasion, bringing back memories of someone to whom we all wish to pay tribute, but who is no longer with us. However, to-day, we not only have the fine plaque which I am about to unveil, but also the aviary, a happy living reminder of my father's work in the interests of bird-lovers. I am sure, were it possible for him to be with us, he would be deeply moved, as indeed I am, by your kindness and that of his friends and admirers from all over the world, who have so generously contributed to this memorial. It is the embodiment of one of his principal interests, and certainly one that brought him the greatest happiness in all his life . . .

" If one walked with him through his aviaries, and he got over his shyness, he would tell one things about birds and their individual characteristics, just as you and I might talk about our friends. I have never met anyone else who had that extraordinary insight into the minds of animals, fishes, or birds, or such a capacity for being able to transmit that knowledge to others. I imagine it was this deep feeling and understanding that made it possible for him to contribute so much for the benefit of bird-lovers. For example, we have here this original discovery that a bird need no longer regard its cage as a prison, but as its home. It was discoveries like this which made my father one of the most distinguished and best-loved aviculturists of his generation. That is why you have given so generously and why I, his son, have been invited to unveil this memorial plaque, and why I have such pleasure and pride in doing so."

The Duke then unveiled the plaque, and immediately afterwards a trap-door in the roof of the enclosure was opened to enable the Budgerigars to fly out at will.

The aviary was stocked with birds from the late Duke of Bedford's collection at Woburn, and from a number of Budgerigar enthusiasts who had followed the Duke's example and raised homing strains.

The " Duke of Bedford Memorial Trophy " is shown in an illustration to this article.

Great credit is due to Mr. R. C. J. Sawyer, Hon. Treasurer of the Duke of Bedford Memorial Appeal, not only for all the hard work he put into raising the necessary funds, but for his thought and care in the organization of the unveiling ceremony.

P. B-S.

* * *

[Copyright] [Fox Photos

THE DUKE OF BEDFORD, LORD HUGH RUSSELL, THE DOWAGER DUCHESS OF BEDFORD, THE DUCHESS OF BEDFORD, LADY DAPHNE RUSSELL, VISCOUNT CHAPLIN.

[To face p. 130

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THE DUKE OF BEDFORD MEMORIAL TROPHY.

To face p. 131]

STUDIES ON GREAT CRESTED GREBES

By K. E. L. Simmons (Tilehurst, Reading, England)

Illustrated by Robert Gillmor

(*Continued from page* 102)

3. Threat and Fighting and their Relation to Sexual Rivalry, Territory, the Defence of the Young, and Courtship

There may be hostility between members of one pair and members of another . . . the only reason I can discover for it is the trespassing of one or both birds of a strange pair upon the territory of another. It is much more interesting, however, to find in these birds what we had best call flirtation . . . a bout of shaking ensues between two birds who are not mated. If the rightful mate sees what is going on, it is always roused to action. . . . It drives the odd bird away (often by a subaqueous attack with the beak) and then almost always has a strong bout of shaking with its mate.

Huxley, 1914: 521 and 558.

Now that the more general side of the Great Crested Grebe's life-history has been briefly outlined in the preceding parts, the rest of the paper will be largely concerned with various intriguing and often spectacular aspects of its reproductive-cycle. Emphasis will lie mainly upon behaviour rather than the more numerical details of the breeding biology, though these will not be entirely neglected.

Writing as recently as 1943, David Lack was able to say, in his *The Life of the Robin*, that " the study of bird behaviour is at so early a stage that it can be described in simple language without loss in precision ". Now, in 1955, the first part of this remark is fortunately no longer true. The objective study of bird behaviour has made rapid progress in this country, thanks mainly to the work of Dr. N. Tinbergen and his colleagues. Tinbergen's book on *The Herring Gull's World* shows clearly, however, that the last part of Dr. Lack's comment can be as true to-day as ever it was, in spite of the great increase in knowledge. The description and analysis of behaviour can still be made interesting and readable to a wide public without any real loss in scientific value. Unfortunately many writers in recent years, myself included, have tended to forget this. The increase in complexity of bird behaviour studies has driven the amateur observer away into other branches of ornithology to a very large extent. This is to be deplored for the non-professional worker considerably helped to lay the foundations of the modern objective approach in the pre-war years.

Questions of threat and fighting will be the subject of the present section. This has not been nearly so adequately dealt with in the literature as the courtship has, although an understanding of the

aggressive behaviour is essential for an appreciation of the nature and origin of the courtship itself.

Brief but valuable information is to be found in Huxley's great paper: he outlined the general territorial set-up in the species (at a time before this concept had fully penetrated ornithological thought to the extent it was to do subsequently) and also recorded, in more detail, that many quarrels between grebes had nothing to do with any territory but were due to sexual rivalry. Huxley's observations on the territorial side of aggressive behaviour were later extended by Venables and Lack, who concentrated mainly on the possible function of territory and did not discuss the many non-territorial aspects.

Aggressive Behaviour and the Annual-cycle

While some bird species, such as House-sparrows (*Passer domesticus*) and Great Tits (*Parus major*), will squabble over food in winter and others, such as the Robin (*Erithacus rubecula*), keep up a winter territory, aggressive behaviour is usually best developed when the birds are in a reproductive mood. The Great Crested Grebe belongs to this last class.

During the winter, between the usual October-end and late January-beginning of noticeable reproductive activity, some grebes may occasionally " bark " and threaten others in open water. This has nothing to do with disputes over food, and is unrelated to any territory. It seems to be due to some sort of weak reproductive tendency, for the grebe is one of those species in which such a tendency is never absolutely dormant. With the inception of the first stage of the reproductive cycle (see p. 13), hostilities develop more intensely. Quite a deal of threatening, some attacking and occasional fighting take place in the open water which is now the scene of very much activity, particularly of head-shaking courtship between mated birds and those in the process of pairing-up. This aggressiveness is due to sexual rivalry, as described by Huxley, in circumstances often much the same as those in the quotation cited at the head of this section. This kind of sexual fighting goes on throughout the cycle, both in the open water and in the area of the nest.

The clash of interests in the " free " ownerless water is nothing in comparison with what happens in the vicinity of cover, when the grebe pairs start to search round for nest sites. Now the birds may have two reasons to set an edge to their tempers—their aggressiveness may be both sexual and territorial at one and the same time. The situation is started in motion by a few (assumed) older and more experienced birds which visit their former territories of the previous season on fine days in winter itself, especially after December has had its run. These territories are defended with increasing intensity as the season progresses. Many pairs, however, go through

their period of initial courtship in the open water and only then start to look round for likely nest sites. Once they have settled down at a suitable spot this site becomes the focus point of their territory and they drive intruders away from it and also from the water surrounding it. The chances of finding unoccupied areas are reasonably good earlier in the season, or on lightly populated waters. But at places with high numbers, however, such as at Burghfield, or at those with a relatively poor amount of cover, this becomes increasingly difficult later. As some of the earlier established territories may have several nest sites in them, when the later wave of site-seeking grebes travels round a few persistent invaders may manage to annex sections of the over-large areas. However, things do not go well for those pairs trying to settle themselves when the local season is in full swing and all the best sites have been requisitioned. They are forced to continue wandering about, intruding now in one territory and now in another, entering cover if unobserved, only to be eventually driven away. Such birds may be forced to nest in unsuitable places or may even be prevented from breeding at all. Some at a later date manage to sneak unobtrusively into the edges of existing territories when the owners are busily incubating or looking after young, while others may be able to take over sites deserted after the occupants have ceased breeding.

Once established, the territories are maintained right through the pre-parental stages of the cycle (see p. 13), during incubation, and also during the time that the adults are tending the young—if the territory is not then deserted. But the period of most intense aggression occurs before the birds begin to incubate. When the young hatch out the parents defend them wherever they may be—in the territory or in the open water—for as long as they associate with them. Thus the Great Crested Grebe is aggressive for various reasons right through its whole reproductive-cycle, and it is convenient next to review these reasons in a little more detail.

The Objects over which Grebes are Aggressive

I hope that from the facts just given it is clear that what may be called the reproductive aggressiveness of the Great Crested Grebe is mainly concerned with (1) the mate, (2) the nest site, and (3) the young. Other grebes coming into the neighbourhood of these are likely to be threatened, attacked, and even fought with.

The Mate

Unless combined with territorial hostility (and it is often hard to be certain whether the birds are fighting for sexual or territorial reasons, or for both), aggressiveness over the mate only reaches a serious state if "flirtation" (as Huxley termed it) is involved for, usually, a paired grebe is content merely to threaten another coming

near the mate. This flirtation (or the displaying together of a male and female that are not paired) is otherwise a little recorded aspect of bird life. As the male Great Crested Grebe is the most likely of the two to show such behaviour, much of this sexual aggressiveness is between females—I have in fact no records myself of a mated female flirting and it is obvious from Huxley's observations that such a thing is rare. Sexual antagonism of this sort is most intense during the pre-parental stages of the cycle. While the male grebe is the more intense of the two in territorial aggression, when his mate is occasionally as persistent as he in threat and attack, even at times more so, then this is because her attentions are directed at the intruding female with which her mate is flirting. Once a paired female went almost berserk in the nesting territory. The male had approached an intruding female first in threat-display and then with an increasing tendency to head-shake, mixing his aggressive calls with the ticking courtship note. Previously, as is normally the case, his own female had stayed behind him in his dealings with the strange pair, but now she dashed at the other female and harried her back and forth across (and under) the territory. She even pecked at her mate in passing! Such recriminations against the " faithless " husband are rare though, as Huxley points out, and marital appeasement is usually effected through head-shaking. On another occasion a mated female was incubating when an intruding female came near. The male was not at all inclined to see the latter away and finally the first female jumped down from the nest and drove her off. Further examples of sexual antagonism—in open water—are given by Huxley.

The Nest Site

The nesting territory of the Great Crested Grebe is built up round the nest site. Unlike many typically territorial species, grebes do not first set up a territory and then fix on a nest site later as the season progresses. Most territories are established when the grebe *pair* has " chosen " a site. This choosing involves entering likely cover, commencing to build there, and displaying, resting and preening in the immediate vicinity. The male grebe is the more aggressive of the sexes in territorial defence. In those older pairs that have kept in touch with their territories during the winter (see above), initial courtship, the visiting of cover, nest building, and the defence of territory all tend to develop together. Territories are never maintained in places where there are no nesting sites. This close link between territory and the nest site is well illustrated by a pair of grebes watched by Venables in 1936 at Frensham Little Pond (Surrey). These birds had chosen nest sites in two widely separated places, both of which they defended but not the intervening open water. At Burghfield, early in the season, individual pairs have had as many as

three nest sites simultaneously, each defending all these and maintaining one large continuous territory. While grebes are always rather inclined to be pugnacious, it is in the vicinity of the nest itself that the most intense aggression is liable to be seen. While invading males will never risk combat over a flirtation they will fight bitterly on occasions to win over a nest site.

Some remarks on the reason for all this trouble, that essential item the nesting-platform, seem appropriate at this point. This is something much more than a place for the eggs: without a platform (or a substitute one) the birds cannot copulate, for this must be done, after soliciting, on a *raised* site. In effect, aggression over sites could be considered as a rather specialized form of sexual fighting.

The Young

Any strange grebe, however innocent its intentions, is liable to be threatened if it comes near the young of another pair, both inside and away from the territory. A typical example of a serious encounter resulting from the defence of the young is as follows. A pair of grebes leaves its nesting territory and wanders off with the brood to the open water to feed. By chance the birds trespass in the territory of another pair and are threatened. The other adult grebes then dive at the young, which do not appreciate the situation, whereupon the parents, instead of making off as they would usually (having no essential interests involved within the other territory), retaliate with threat, actual fighting perhaps then resulting. If, as occasionally happens, such a wandering family makes its temporary headquarters at a stretch of water away from the original nesting territory and the parents chase off intruders coming near the young, because of the birds' restricted mobility, an accidental territory of sorts appears. This should not be confused with a fixed territory centred on the nest, however, for it moves with the young.

The Type of Nesting Territory Maintained

All breeding pairs of Great Crested Grebes exert ownership over a nest site at least, but the size of the defended water adjoining this, as well as the number of activities conducted there, varies considerably. Much depends on the density of the population and the degree of competition for sites (and hence on the amount of cover available). Another most important factor is the nature of topography: whether the littoral cover is irregular, with a small frontage of water (for example), affording each grebe pair a good view of its neighbours; or even, with a wide frontage of water, so that the birds are hidden from one another when at the nest.

The territorial situation at Burghfield may be briefly outlined, using

Mrs. M. M. Nice's classification of the main types of nesting territory as a convenient basis for discussion. These are:—

A. Mating, nesting, and feeding ground for the young; B. Mating and nesting ground, but not feeding ground; C. Mating station only, and D. Territory restricted to the narrow surroundings of the nest, as found in both colonial and solitary species.

As pointed out by Huxley, most pairs of Great Crested Grebes maintain a territory of Type B. Within this area (which may measure from 300 to 900 square yards at a very rough approximation), the two birds build their platform (or platforms), do some of their courtship, all their intimate sexual behaviour, and incubate the eggs. Only an unimportant amount of their food is captured there and they hunt most in open water away from cover. They may desert the territory when the young hatch out.

In addition, I have found that a few pairs have held a joint nesting and feeding territory of Type A. At Burghfield, there is a small, land-locked island-dotted pool of some 2 acres which has a narrow, bottle-neck entrance leading from the open water. This " breeding-pool ", as we call it locally, is a very popular nesting spot for the grebes and in 1954 no less than nine pairs tried to breed there, though usually it holds five or six pairs at the most. As in all the other years from 1948 onwards, one pair established an early Type A territory of about $\frac{3}{4}$ acre while all the remaining territories, occupied by stages later, were crowded into the other $1\frac{1}{4}$ acres and their owners fed away from the pool. Some of them had to *dive under* their neighbour's areas to reach the open water. A small proportion of pairs (two in 1954) sneak into a densely populated place like this after the others have settled down, and are often very furtive except in the immediate vicinity of the nest. Thus, such suppressed (and compressed) birds really have a Type D territory of only a few square yards.

The normal Type B grebe territory can never provide enough food for the adults and the chicks so that the parent birds must of necessity leave it with their brood to hunt elsewhere. But often the territory is not deserted entirely when the young have hatched, as Venables found to be invariably the case at Frensham. The birds may keep in touch with it and rest and roost there. The less fortunate pairs with a Type D territory, on the other hand, probably invariably desert their nest site entirely when the young have come off, as my friend C. E. Douglas points out to me. The few pairs with the larger Type A territories remain in them for the whole season, though individual excursions are made by both male and female, sometimes with the young. Those grebes owning such territories locally seem the most likely to engage in genuine second-broods and often rear the most offspring in a season. Thus in 1954, the pair (A54 in my numbering) inhabiting the large, traditional nesting/feeding territory in the

breeding-pool reared two broods of two young each. Another isolated pair on a small pool near by (see p. 12) reared four stripe-heads as well, the two pairs between them (both in effect occupying Type A areas) raising twice as many young as all the remaining 16 pairs. None of the Type D birds had any surviving chicks at all in that year, which was not, however, a very good breeding year in general as it happened (L. McCartan confirms for the Oxford area). All this would suggest, perhaps, that the territorial set-up is still evolving, rather than declining, in the Great Crested Grebe. The advantage seems to be with the birds possessing the rare Type A territories. It may be remarked in passing that the Dabchick seems invariably to establish territories of this kind (Hartley, 1937).

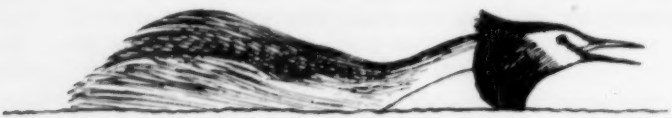
The Patterns of the Aggressive Behaviour Itself

So far only the reasons for, and the results of, the aggressive behaviour of the Great Crested Grebe have been discussed. It is time to deal with the actual patterns of behaviour involved in clashes between rival grebes. No detailed study has yet appeared in the literature, though Gunn (1928) wrote a useful short article on " The fighting methods of the Great Crested Grebe " and brief notes are scattered through the papers of Huxley, and of Venables and Lack.

The principles involved in bird antagonisms are relatively complicated and the whole problem is admirably discussed by Tinbergen in a series of works published in 1953. A few general points may be summarized here. Just as in individual (as opposed to factional) hostility in human beings, actual physical fighting is comparatively rare in birds, though rather less infrequent in grebes than in many other species. Strong aggressive inclinations are usually denied uninhibited expression because of a counter tendency to escape. Aggressive birds are thus usually prevented from seriously hurting one another because they are also, to a variable extent, afraid of each other as well. It is of importance to the survival of the species that such a state of affairs should be the general rule: apart from the fatalities that unchecked fighting might inflict, too great an aggressive make-up in the individual bird might seriously interfere with its sexual relations with the opposite sex, *unless some other pattern of behaviour is evolved to counteract it*. The conflict and compromise between attacking and fleeing tendencies, as well as the temporary supremacy of one or the other, is part of the *causal* basis of much of the hostile behaviour of birds and accounts to a very large extent for the relative variability of possible responses in hostile situations. In the Great Crested Grebe these responses include attack and fighting (aggressive element dominant); threat, incipient attack and displacement-activity (attack impulse inhibited by fleeing one), and actual escaping (urge to withdraw strongest of all).

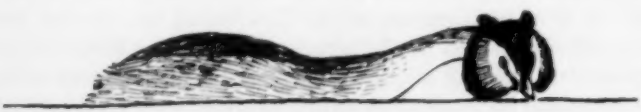
Threat : The Forward-display

This display (which Huxley called both the search- and Dundreary-attitude) is the most common item of the grebe's hostile repertory. In intense versions, when the bird is very nearly, but not quite, on the point of attacking, it stretches the lowered neck well forward horizontally so that it is often at least partially awash, though the head itself is usually just clear of the water. The tippets are spread forward (in " curtain-form " according to Huxley's classification) and what appears to be the folded secondaries on the back, or at least their coverts,



Forward-display—higher intensity, directly facing the rival and calling.

are unevenly rucked up so that in extreme cases the white becomes visible (in fact the wings start to unfold). In this posture the angry grebe may often swim towards, or face, the rival directly, so that its body is squarely behind the forward pointing bill. It may call loudly and frequently. The threat-calls are rather variable but always recognizable for what they are. The most common version is a harsh repeated, barking " rraaah–rraaah . . . ", broad vowelled (sound as in " bat ") and rather coarse-sounding—obviously the call termed the bark by Huxley. Coward's " discordant ' gorr ' " refers to a variant of the same note. At lower intensities this barking degenerates into an undertoned, nasal and somewhat metallic " gang-gang-gang ". The less aggressive the threatening grebe becomes, the more incom-



Forward-display—lower intensity, head only towards rival.

plete is its display. The first component to disappear is the raising of the feathers over the back. The neck becomes less fully extended and more bent so that the head comes nearer to, and sometimes touches, the shoulders. The tippets are not so noticeably spread or may even be actually depressed. A bird in such a relatively low intensity posture is obviously not very inclined to attack; it may approach the rival laterally, cease advancing, or even swim at an angle away with just the head turned towards it. Sometimes a grebe that has

approached another very purposefully in intense display may assume the less complete posture as it gets nearer, especially if its opponent has stood its ground and perhaps threatened back. Obviously the advancing bird's tendency to escape has been increased. On the other hand, if the other grebe flees, this often tips the scale and turns the threatening bird's display into active attack.

Threat : Token-diving

While it is obvious from simple observation that the forward-display functions to stimulate withdrawal in other grebes, the sight of an aggressive bird actually diving in its direction is a still stronger inducement for an intruder to retreat. It is not surprising then to find that a more formal kind of diving—token-diving, as I call it—functions also as a close-range threat, often used in conjunction with intense forward-display. This often occurs when two equally matched grebes are opposed. Facing its rival, one of the birds (or both) may dive as if to attack the other from under water. But there is no force in the spring and no progress made towards the opponent below the surface. The diving bird comes up at the very point of submersion, or even a little farther away from the other grebe than before. Such behaviour is typical of quarrels between neighbours on the border between territories and seldom leads to fighting. The whole situation is in other cases always volatile: a serious fight may break out and one-sided attack is ever imminent, especially if one of the contestants starts to retreat, as often happens.

One-sided Attack

In many cases attack is not pressed home because the very sight of an aggressive grebe approaching in a menacing way is enough to send the less purposeful bird into retreat at full speed. Hence, attacks often do not proceed past the initial diving advance. However, if the attacking grebe can surprise its rival, or if the latter does not retire fully but remains on the surface, the former may spear or " torpedo " it from under the water with its dagger-bill. Lunging attacks with the bill are also made across the top of the water, often from the intense forward-display position. The bird opens out its wings and, with neck outstretched, half-flies, half-patters over the surface at the adversary, often then submerging in pursuit, as the other crash-dives away from the onslaught, or going into the forward-display again. Should the aggressor catch up with the fleeing grebe, either below or on top of the water, it attempts to seize the other's head in the bill, rather like it deals with a fish, and to force the unfortunate bird under the surface, getting on top of it and perhaps keeping balance with open wings. As I have already recorded on p. 96, I once saw a grebe held under the water in this way for at least three minutes. The bill-grip needed

to do this must be most powerful and it is little wonder that fish stand small chance of surviving after once being caught.

Now that the attacking methods have been briefly outlined, it is possible to trace the origin of the forward-display : natural selection has simply ritualized the grebe's preparation to attack. Clearly the

Lunging-attack over the water surface.

display is based upon the surface attacking movements. In intense versions of this display, which are very likely to turn into attack, the head is held forward for spearing with the bill and the wings held partly open ready to unfold for the lunging flight at the opponent. Indeed, at times the forward-display may develop into incipient, or " token ", attack: the grebe briefly opens its wings, rushes across the water for a very short way, subsides in the bow-wave, and again displays.

Fighting

Fighting between two birds occurs occasionally when both are extremely pugnacious and do not retreat. Usually something is at stake—a nest site, for instance. A typical combat might develop like this. Two rivals, usually males, face each other a few feet apart in full forward-display. Token-diving may occur. Then suddenly, and apparently simultaneously, both grebes leap at each other and clash vertically breast to breast, stabbing and grappling with the bills, both trying to get on top of its rival and hold it down, as described above. The wings may be loosely held open but are not used as fighting organs. Usually, if the fight continues, one bird does manage to force the other under the water, where it struggles to surface and causes a turmoil of water. Another serious encounter may proceed like this. Two pairs—

the owners of the territory and an invading couple—meet on the outskirts of a clump of cover. Neither male will retreat. They face, to all appearances " daring " each other in an upright position with necks stretched up and often slightly held back, tippets expanded, bill open and inclined downwards ready to strike. A very throaty, vulgar edition of the threat-call may be heard (" gghh-aaarr "). Suddenly, as before, fighting may break out. Often before this, however, one

Upright pre-attack posture.

bird may begin to lose its nerve, as it were, and start to waggle its head a little and also to habit-preen, both as in typical head-shaking display, gradually relaxing its strained posture. If the rival makes no movement, it will slowly withdraw, displacement-preening as it goes. Then often the other grebe " comes to " and attacks. There is a distinct resemblance between the upright pre-attack posture and the one assumed during head-shaking courtship; perhaps this is by no means merely coincidental.

I know of no certain case of death resulting from fights between grebes, but have circumstantial evidence that it may occasionally occur. At one of the two small pools near Burghfield, that was occupied by a single breeding pair, I found the body of a freshly killed adult grebe. This bird had a small but deep wound at the base of the neck which could have been caused by a beak stab, for its own bill fitted very well into the hole.

Withdrawal : Escape

I have just described how a bird in the upright, pre-attack posture may behave as its tendency to withdraw overcomes that to fight. Very often, in less serious circumstances, a grebe that has been threatening will turn away, and, if not pursued, swim off preening various parts of its body as it goes. Such " displacement-preening " is a sure sign

that the bird is now in no mood to attack. The behaviour is very probably caused by the urge to escape from the adversary over-riding that to attack it, for the bird retreats from trouble. John Field has kindly told me his experience with a captured grebe brought to him for release: when being held, this bird both pecked and struggled to get away—and also preened its feathers.

Furtive-posture.

An intruding grebe with a strong tendency to escape is unmistakable. It holds its neck right up into an almost pencil-like thinness, probably to command a wide view, and tightly depresses its tippets and crest so that the head seems unusually slender with little break in its contours. I call this the furtive-posture. The wary bird dives frequently and is always quick to move off if threatened. Though it is obviously merely an elaboration of the normal pre-diving attitude (see p. 96), the furtive-posture serves to reduce the grebe's conspicuousness by concealing the head-ornaments as much as possible, achieving exactly the opposite effect to the threat and courtship displays.

A frightened grebe's usual method of active escape is to dive away from an advancing bird. It will also retreat across the surface. With head up and the tippets flattened, it skids forward on the breast with legs driving powerfully behind and wings waving. This skidding is often followed by diving. Sometimes, however, the fleeing grebe may pause, turn in its tracks and dip its head under the water to look for the other bird, then diving or skidding on again, or relaxing as is necessary. Which of the two ways of escape will be used at any one moment depends, to a certain extent, on the behaviour and proximity of the attacking grebe. If the latter dives while still some distance away, or lunges across the surface at very close range, the other bird will often

dive to evade it. But should the aggressor submerge near at hand, lunge while still some way away, or spear from the depths, then a surface, skidding escape is more usual.

Frightened grebe escaping over the surface.

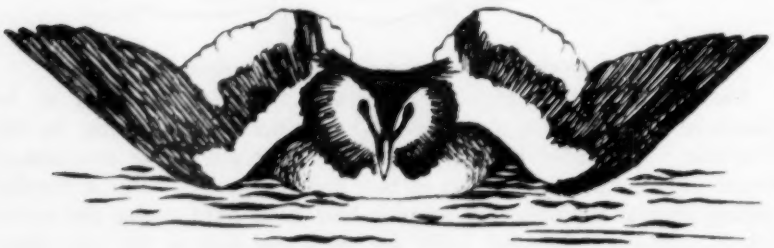
Two less frequent aspects of escape behaviour remain to be mentioned. I have a few records of individuals bathing in the " frantic " way described on pp. 101–2 after aggressive encounters. Bruce (1950) saw the weaker of two fighting grebes, after a combat lasting several minutes and after it had been held under the water briefly, remain " floating, belly up, with one foot in the air, wings partially opened and its head and neck below the water, giving the appearance of a dead or unconscious bird. It remained in this

" Escape " bathing (see pp. 101-2).

position for about one minute while the other bird swam slowly round it, giving it occasional stabs with its bill but getting no response; next, it suddenly dived from this position without any warning. It reappeared some way off and immediately went into the usual head-shaking display with its mate. From its subsequent appearance and behaviour it did not appear to have been injured ".

The " Cat-attitude " in Hostile Situations

Instead of fleeing or going into the forward-display, some grebes that are threatened by others, or at least are being approached by birds whose motives are uncertain, may assume a version of the bizarre display called the " cat-attitude " by Huxley. In this, the most striking of all grebe postures, the wings are held half-open at right angles to the body and tilted forward, the white markings showing up conspicuously. The tippets are expanded and the head tucked back so that it is framed by the wings. So far, when sure of the sex of the displaying bird, it is only the female grebe that I have seen behaving thus.



Cat-attitude (high intensity).

Sometimes the odd female involved in a flirtation may go into the cat-attitude when being chivied by the mated pair, the male of which has just been head-shaking with her. Females " advertising " for a mate in open water will often go into the display when approached by other birds (Simmons, 1954). Once such a female was the onlooker in a fierce territorial skirmish between three pairs of grebes. Every time that one of these birds came near her, she went into the " cat ". A mated female, alone in the territory and advertising for her mate, half-assumed this display when a pair of grebes started to head-shake near by.

Strangely enough there seems to be only one record of this sort of use of the cat-attitude in the literature, that of Hartley (1940). His remark (on what he considered incorrectly to be unusual behaviour) that " Variations in behaviour such as these may help to elucidate the relationship between the sexual and aggressive displays of the Great Crested Grebe " is very true indeed, as I hope to show later. Briefly, I think that a bird goes into the cat-attitude when its tendency to escape is influenced by a sexual impulse. The display aims to inhibit attack in the other bird—is a " defensive " display.

Aggressiveness and Courtship Behaviour

There are several other aspects of the aggressive behaviour of Great Crested Grebes (including the relationships with the Dabchick and Coot), but only those questions outlined below, concerning paired birds, can be given space. These will be briefly treated now and developed further in the section dealing with courtship.

Head-shaking and Hostility

Occasionally, during actual hostilities, a bird may head-shake at its adversary of the *same sex*. Head-shaking may occur between unmated birds of the opposite sex in cases of flirtation and during pair-formation. But in the majority of instances that come under the observer's notice, the display is a mutual affair of the mated pair of grebes. Very often in the pre-parental stages of the cycle, this type of courtship is " spontaneous " or virtually uninfluenced by the activities of other birds. It may also be " induced " by outside factors, however, and most of the head-shaking performed during the parental stages is of this nature. An almost invariable feature of aggressive encounters is the induced head-shaking that takes place between the mated birds concerned, during pauses in the skirmishing or afterwards. Thus territory owners unite and display after driving away intruders. The latter, when at a safe distance, may also link up and shake as also may onlookers, not directly concerned in the affair. In view of the extreme frequency of such behaviour, it is rather surprising that no previous writer has stressed this aspect of head-shaking.

Actual and " Symbolic " Aggressiveness within the Grebe Pair

I hope that it is obvious from the account so far given that the Great Crested Grebe is potentially and actually a very pugnacious bird. It is rather surprising then to find that so little antagonism occurs between the male and female of the pair, especially when one realizes that the mate has all the external characteristics that otherwise, if it were an outsider, might often stimulate intense aggression in the other partner. Moreover, grebes are " non-contact " birds—that is, except when fighting, copulating, or performing one of the courtship displays (the " penguin-dance "), they do not voluntarily touch another member of the species. (This contrasts with the behaviour of such a group as the little Estrildine finches so well known to aviculturists.) One would expect, therefore, to find overt hostility to be very conspicuous between paired grebes. Even the renowned Lovebirds (*Agapornis*), typical " contact " birds which show every sign of affection to the mate, will at times spar quite fiercely. But the grebes are hostile to one another only occasionally and then quite mildly. Male and female tend to assume lower-intensity forward-displays when approaching each other and, rarely, one may surface under its mate in incipient

attack and give it a scare, the two birds head-shaking after. (Dabchicks will trill in such circumstances.)

On the other hand, grebes do perform what might be considered in other species an abnormally large amount of courtship display. Spontaneous head-shaking is very common during the pre-parental stages and induced display occurs throughout the whole reproductive cycle. Also, during the first four stages of the cycle other courtship activities are not infrequent, particularly what Huxley terms the "discovery" and "display" ceremonies in which the cat-attitude figures prominently. I believe that a large measure of aggression, that might result in overt hostility between male and female, is absorbed by courtship behaviour. Courtship in grebes is caused by a mixture of sexual, aggressive and fleeing impulses, and functions, not only to maintain and strengthen the pair-bond as Huxley suggests (see p. 10), but also to inhibit and absorb aggression. There is much evidence to support this theory, not least of all being the fact that *the display movements themselves seem to be very highly ritualized, or "symbolic" fighting ones.* The discovery-ceremony, for instance, seems obviously a stylized one of attack and rebuff. Further discussion will be reserved for the next section.

(*To be continued*)

Note.—The page numbers quoted refer to the previous instalments of this article published in the current volume of the Magazine.

* * *

CARE AND FEEDING OF THE COCK-OF-THE-ROCK

By H. A. Gerrits (Curator of Birds, Wassenaar Zoo, Holland)

In the Louise Hall of the Wassenaar Zoological Gardens we have three specimens of the Cock-of-the-Rock, namely a couple of the Orange Cock-of-the-Rock (*Rupicola rupicola*) and a male of the very rare Scarlet Cock-of-the-Rock (*Rupicola sanquinolenta*).

The third representative of this family, *Rupicola peruviana*, resembles *Rupicola rupicola*, and has the same bright orange colour, but has no filaments on the wing feathers.

Although the Cock-of-the-Rock is a rare bird, it will be known to many, who have not seen living specimens, by illustrations which have been published in various books and periodicals from time to time. As the Cock-of-the-Rock lives in the humid, dense, mountain jungles of Guiana, Cayenne, and a part of the Amazons, the installation of the aviary when the bird is kept in captivity is equally important as its diet.

The diet of the Cock-of-the-Rock consists officially of fruit, but in its natural habitat it spends a great part of its life on the ground looking for all kinds of small insects.

Anyone who tries to keep this bird in a cage or in a common aviary with a sand bottom only, and who feeds it with fruit only, will within a very short time have the bird out of condition, and if no alteration is made the bird will very soon die.

Being fully aware of these facts the Zoological Gardens of Wassenaar planned the living surroundings of the Cock-of-the-Rock quite differently and with this and a very carefully composed diet we have succeeded in keeping our three Cocks-of-the-Rock in perfect condition for four years already.

In the first place it is absolutely necessary to keep the birds apart, as these birds are very pugnacious, and although they may get on very well together in the beginning, a disastrous quarrel will sooner or later occur, resulting in the death of one of them. The planning of the aviary was a very careful job. The ground was covered with a thick layer of black mould about 30 inches high, already containing numerous small living insects. Beneath this black mould is a 6 in. layer of broken shells preventing the earth from going sour. The earth is generously sprayed with water daily, giving it the necessary humidity. This provides an excellent ground for the Cock-of-the-Rock, preventing the bird from getting all sorts of foot troubles.

The aviary is about 12 feet by 7 and 8 feet high. The growth of plants should be abundant; numerous and high-growing plants provide the bird with its accustomed quiet surroundings, and to this a few small rocks should be added. Besides their artistic value, these rocks play a part in the feeding. We observed that this bird is very fond of snails, so when obtainable we fed them some daily, and it is most interesting to see how they smash the snail shells on the rocks in the aviary before eating the contents.

Coming back to the aviary, I forgot to mention that the earth on the ground is grown over with grass, while a large shallow water-basin enables the bird to take its beloved bath. Moreover, a few nicely arranged thick branches are added for perching.

The Cock-of-the-Rock's sensibility to temperature gives us no trouble. The temperature of the Louise Hall rises on hot summer days to 35° C., and judging from its behaviour the Cock-of-the-Rock finds this pretty hot too; bathing takes place more frequently, and the bird sits in the shadow for the greater part of the day. In winter, however, when it is freezing, and the temperature falls back to $\pm$ 5° C. during the coldest part of the night, the Cock-of-the-Rock reacts quite normally, and there are no signs whatsoever that the bird cannot stand the cold. Of course, these extreme temperatures do not occur

overnight. Between the 35° of August and the 5° of January four months must pass in which the temperature is gradually falling.

Incidentally, I want to point out that the differences in day and night temperature, which sometimes occur in hot summer days, and may be 15° C. on a single night, act extremely favourably on the general condition of the birds. On second thoughts, one has to admit that this is not so remarkable, as in nature, and especially in the tropical habitat, there is an even greater difference between the day and night temperatures.

I shall now discuss the feeding of the Cock-of-the-Rock. In the first place I want to state that the feeding is based on a morning and an evening diet of quite different composition. The morning diet is given at 9 o'clock, and consists of:

3 spoonfulls of boiled rice (the grains must be dry and not sticking together at all);

1 grated carrot;

1 spoonful of dextropur (glucose and fructose);

3 spoonfuls of very finely chopped hard-boiled egg;

3 spoonfuls of a very good insectivorous food, to which dried ant eggs and dried insects are added.

These ingredients must be thoroughly mixed before giving them to the birds.

In addition to this food, six small balls are given to each bird. These balls are the size of a berry, and consist of:

1 chopped banana (this also holds the other dry ingredients together);

1 spoonful of rennet;

Several minerals and vitamins and wheat germ meal;

1 grated carrot;

4 teaspoonfuls of insectivorous food.

Each bird is provided with ten mealworms daily.

Finally, twice a week, each bird is given one very young naked mouse.

This morning food, of which the grated carrot is very important with regard to retaining the colour, is replaced at 3 o'clock in the afternoon by a bowl of chopped grapes, banana, and other fruit, as we found that the birds so greatly prefer grapes they should never be omitted.

The left-overs of the morning food can be given the same day to other insectivorous birds, but may under no circumstances again be given to the Cock-of-the-Rock on the following day. The preparation of this food is rather elaborate, but it must be done each day, so that the bird has a fresh supply daily.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

A number of rare and interesting birds have been received in the Gardens during the past two months. Those new to the Collection are a Bronze-winged Jacana (*Metopidius indicus*) and a Malaysian Black-naped Oriole (*Oriolus chinensis maculatus*), both presented by Sqdr.-Ldr. K. C. Searle ; a pair of Southern Brown-headed Parrots (*Poicephalus cryptoxanthus*) presented by Mr. E. H. Hawke ; a Black-throated Chukor (*Alectoris graeca philbyi*) presented by Mrs. Drummond, and a Red-headed Manakin (*Pipra rubrocapilla*) purchased.

Unfortunately the Jacana arrived with a badly injured leg which did not respond to treatment, and the bird had to be destroyed. The race of Brown-headed Parrot that had previously been in the Gardens is the Zanzibar one, *P. c. zanzibaricus* or *P. fuscicapillus* as it used to be called. The Black-throated Chukor was first described in 1934 : it is a race inhabiting south-western Arabia. A good coloured plate of this bird appears in Meinertzhagen's *Birds of Arabia*, wherein it is called " Chukor (Hejaz race) " which seems not such a good common name as the more descriptive and more easily pronounced " Black-throated ".

A young Coucal, not yet identified, has been presented by Mr. E. J. Boosey, and a Tufted Duck by the Ministry of Works. An Orange-headed Ground Thrush (*Geokichla citrina*) has also been presented.

A fine male Masai Ostrich and two Maccaroni Penguins have been received in exchange, and four Speckled Pigeons, or Triangular Spotted Pigeons as they used to be called, and two Cape Doves have been deposited.

Three Black-footed Penguins have been bred in the Gardens.

Many of the usual birds are nesting and two unusual ones—the Cormorants and the Grey-headed Gallinules. The Cereopsis Goose eggs were infertile as were, yet again, the Emus.

Some of the " homing " Budgerigars have been coming out from the new aviary, but, of course, most of them are nesting, and there should be a better show later on when the young ones fly out.

At the Society's quarterly meeting in April, Head Keeper A. J. Woods was presented with a bronze medal for his skilful care of the nestling White-necked Picathartes that he hand-reared and brought safely to London.

* * *

BRITISH AVICULTURISTS' CLUB

The forty-seventh meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 11th May, 1955, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. H. G. Alderson, P. C. Bath, Hylton Blythe, Miss K. Bonner, Mrs. V. M. Bourne, W. Brain, T. R. W. Crewes, W. D. Cummings, W. T. Dring, Mrs. W. T. Dring, B. H. Dulanty, O. E. Dunmore, Mrs. M. D. Esson, Squadron-Leader C. Everitt, Mrs. C. Everitt, Miss S. A. Fothergill, H. J. Harman, Dr. E. Hindle, Miss S. I. Hobday, G. T. Iles, Terry Jones, Dr. R. S. Kirk, Miss E. M. Knobel, Miss M. H. Knobel-Harman, G. C. Lynch, S. Murray, S. Porter, A. A. Prestwich, R. C. J. Sawyer, D. Seth-Smith, P. Sutton, N. S. Walker, C. H. Wastell, H. Wilmot.

Guests : Mrs. P. C. Bath, Miss E. V. Baxter, M. F. Bevington, Mrs. M. F. Bevington, S. Croucher, Mrs. S. Croucher, Mrs. O. E. Dunmore, Miss M. Elliott, A. C. Esson, W. C. Hall, G. T. Lynch, Mrs. R. Maurice, Mrs. S. Murray, Mrs. G. H. Palmer, A. H. Rudd, Mrs. D. Seth-Smith, A. E. Sibley, Mrs. P. Sutton, Mrs. C. H. Wastell, Miss H. Wastell, I. Watts, Mrs. H. Wilmot, W. A. Wood.

Members of the Club, 35 ; guests, 23 ; total, 58.

The programme for the evening consisted of two coloured sound films kindly loaned by the Commonwealth of Australia News and Information Bureau. The first, " Feathered Fishers," was introduced by Mr. Gerald Iles, and the second, " Australia's Coral Wonderland," by Dr. E. Hindle.

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

San Diego Zoo now has a Mantells Kiwi, presented by the Auckland Zoo.

* * *

Mrs. Enid M. Ammann, of Vancouver Island, B.C., had a nest of three Java Sparrows reared last September. This was quite an event as they seldom, if ever, breed so far north.

* * *

The Medal of the Avicultural Society of South Australia has been awarded for first breedings to :—

Mr. N. Potter, for breeding Smith's Finch-Lark.

Mr. Colin McKechnie, for breeding the Lesser Browed Waxbill.

* * *

C. af Enehjelm, Helsingfors, reports that his Lesser Rock-Sparrows (*Petronia dentata*) have nested successfully : one young one left the nest on 19th April, and another on the 22nd. This is probably a world " first ", although Russ does say Prince Coburg-Gotha bred this species in 1873.

* * *

Some other early reports from C. af Enehjelm's aviaries are that three young Three-coloured Parrot-Finches have left the nest, two very fine and one poor : five Bicheno's Finches are out and thriving : there are five young Plum-heads in a nest, almost ready to leave : and one Jameson's Firefinch just hatched ; three eggs in a previous nest had young dead in the shell.

* * *

W. Langberg, Copenhagen, has recently had a near-success in breeding a Red-faced Lovebird. The hen laid four eggs and sat for fourteen days. One egg was fertile and was transferred to a pair of Budgerigars. It duly hatched and the young Lovebird was reared until twelve days old when it suddenly died.

* * *

Mr. C. K. Lucas, Editor, *Australian Aviculture*, with Mrs. Lucas, is attending the Empire Legal Conference in London in July. He will be in Europe from 10th May until 8th September, and during his stay is anxious to see as many private collections as possible. His provisional address is care of The Commercial Bank of Australia, Ltd., 12 Old Jewry, London, E.C. 2.

* * *

J. O. D'eath reports that whilst on an Easter tour of Dutch zoos, waterfowl breeders, etc., he visited the well-known collection of our member, D. G. Schuyl, of Rotterdam.

D'eath writes : " Mr. Schuyl has the distinction of being the first in Europe to have a breeding pair of Bronze-winged Duck (*Anas specularis*), native of South America." At the time of D'eath's visit three eggs had been laid, and Schuyl was hopeful of successfully rearing some ducklings when a clutch had been completed.

* * *

A record price of £9,200 was paid at Sotheby's on 21st March, 1955, by W. H. Robinson, the London booksellers, for Audubon's *The Birds of America* (1827–38). This set belonged to Mr. John Heathcote, of Conington Castle, near Peterborough. The previous highest for this country was the £7,000 paid for the Silvertop set at Christie's on 3rd July, 1951, also by W. H. Robinson, on behalf of Lord Hesketh. It is interesting to recall that the published price in London was £182 14*s*. the set ($1,000 in America).

Captain Gustaf Lilliehöök, formerly of Skansen Zoo, relates an interesting experience. Some years ago, two young Eagle-Owls (*Bubo bubo*) about four or five weeks old, were found in a forest some distance from Stockholm. Evidently they had been abandoned by their parents, so they were taken to the Zoo. As soon as they were put in the large owl aviary a number of the old owls gathered round the chicks and soon began to feed them. They continued to care for the young ones until they were able to fend for themselves.

A. A. P.

* * *

REVIEW

RECORDS OF BIRDS OF PREY BRED IN CAPTIVITY. Second edition, revised and enlarged. By ARTHUR A. PRESTWICH. London, 1955. Price 10*s*.

The first edition of *Records of Birds of Prey Bred in Captivity* was published in 1950, and exhausted by the end of 1951. The second edition, which fills an urgent need, is revised and enlarged, and the records of each species are given as far as possible in narrative form. The author states that some of the quotations, which are given exactly as reproduced, may appear over-long. But as many of the works quoted are scarce and difficult of access, this cannot in any way be considered a drawback. Forty-six species are included, by far the greatest majority being Owls, birds which have always been the most popular among the birds of prey in captivity.

Mr. Prestwich has added another excellent and valuable work to his volumes on birds in captivity, and this book will undoubtedly meet with the same great success as the first edition.

P. B-S.

* * *

NOTE

CORRIGENDA. Vol. 6, No. 2. March–April, 1955

Page 49, line 15, for " normal white " read " normal, white ".
Page 49, line 16, for " Chestnut-flanked Zebra Finches " read " Chestnut-flanked *White* Zebra Finches ".
Page 52, line 7, for " interesting " read " *interested* ".
Page 52, line 45, for " South African Warbling Finches " read " South *American* Warbling Finches ".

CORRESPONDENCE

FURTHER NOTES ON NECTAR FEEDING TO FRUIT-EATING BIRDS

Since my notes on the above appeared in the December, 1954, issue of the Magazine, I have carried out a number of experiments, the results of which may be of interest to members. Previous to this I had, as stated, not given nectar to Tanagers, etc., other than with the use of sponge cake. I have now had further opportunity, and have tried Tanagers with a small jar of nectar in addition to my normal food, orange, insectivorous food, sponge cake, etc., and I find that Scarlet Tanagers, Black Tanagers, Violet, Blue and Black, Festive, and Yellow, will consume a one-ounce pot twice a day, but Striated and Yellow-billed do not touch it at all.

Recently I received two Emerald Toucanets from Mexico; these birds are larger than the Banded or Spot-billed. I tried them with nectar with a two-ounce pot twice a day, it was always consumed. All Fruit-suckers (*Chloropsis*) appear to take this very readily, I have had Golden-fronted, Hardwicke's, and Jerdon's, and they all relish this food. It appears from these and previous tests that the large majority of fruit-eating species, no matter the size, will take this food and derive great benefit from it.

P. H. HASTINGS.

182 SULTAN ROAD,
LANDPORT, PORTSMOUTH.

BREEDING RESULTS FOR 1954 AT HILLINGDON, MIDDLESEX

Breeding results for 1954 were disappointing, more especially as we had high hopes, having cured the CAT menace with the electric fencer, alas, from now on the weather must take the blame for all failures, and in the case of last year's sample, quite rightly, too.

Of the two pairs of Plum-heads, one pair reared one youngster to ten days, and then unfortunately lost it, owing to a severe drop in temperature and the fact it was on its own and not being brooded by then; they had three eggs in their clutch, two hatched, one being found in the flight soon after. The other pair, as in the previous year, had a clutch of five eggs, all infertile. Of the two pairs of Many-colours, one pair had three fertile eggs, which most disappointingly the hen deserted as they were due to hatch; the other pair, 1953-bred, the hen became eggbound, but recovered on being brought indoors and subjected to heat, laid one egg, and ceased to have any further interest in matrimony for the rest of the season.

Barraband's produced one very fine youngster, a hen, sole survivor of a brood of three; the other two were lost owing to torrential rain and a drop in temperature of 15 degrees, so much water had entered the nest-box the nest had to be changed, but this had no ill-effect on the surviving youngster. Rock Peplars, one of the most charming of Parrakeets, reared one youngster, a cock; this was also rescued and the nest changed, and at the same time three infertile eggs were disposed of. The other pair, 1953-bred, were not given a nest-box, being too young for breeding. A few Cockatiels were bred.

Bourke's were of particular interest inasmuch, as one youngster, of a number bred, was of very bright colour, the back and wings being yellow and pink, the head yellow, not pretty but should have great possibilities for breeding. E. N. T. Vane had a similar coloured bird turn up in his aviaries, which he kindly allowed me to have in the hope they would prove a pair, and thereby produce more unusual colours. A few Gouldians were bred, but the results are not all they should be, owing to squabbling between the pairs, despite numerous nest-boxes of the same type being provided, in the hopes of avoiding just this, so there is evidently no answer but cage breeding, which I do not favour.

J. H. REAY.

CRANMORE,
THE CLOSE,
HILLINGDON, MIDDX.

A RARE AMAZON

It is not often that one picks up a rare bird in one's local pet shop, but I had this unexpected experience not long ago. I was passing the shop in question, when I noticed in the window a small parrot which I could not quite place. It looked as though it might possibly be a small and very immature Cuban Amazon, and as we have several adult Cubans, and as it seemed so desperately timid, falling off its perch if one approached its cage, I decided to buy it. It has now been at Keston for about two years, and though it has come into lovely condition in an outdoor aviary, it remains very dull-coloured for an Amazon.

From the description in Tavistock's *Parrots and Parrot-like Birds*, it would seem that it is the Jamaican or Red-throated Amazon (*Amazona collaria*), although I should have said that our bird, which is much smaller than a Blue-fronted, is more like 10 than 12 inches in length. They are described as " rare in captivity ".

It is now an active little bird and a strong flier, with a distinctive medley of cries quite unlike those of the larger Amazons, and is much steadier than it was, now it has regained its powers of flight. Although I don't know its sex, I would like to try and get it a mate, so should be interested to hear from any member of the Society who might, by chance, have one of these Amazons for disposal.

EDWARD J. BOOSEY.

BRAMBLETYE,
KESTON, KENT.

MARKED WHITE ZEBRA FINCHES

If Mr. N. V. Whitehouse had taken the trouble to refer to my article on the new Zebra Finch mutation he would have seen that I did *not* call them " Chestnut Flanked Zebras ", but Chestnut-flanked *White* Zebra Finches ; and the obvious error in my last article (in which " White " was omitted) cannot have caused his concern, since this article and his letter appeared simultaneously in the Magazine.

Furthermore, a glance at the photograph accompanying my original article, of one of our pairs of these birds with the markings clearly shown, would have rendered unnecessary his discourteous and quite uncalled-for remarks about " stock . . . of very poor quality ", and " When Mr. Boosey seees some good specimens ".

Incidentally, as Mr. Whitehouse claims to be the originator of this variety, and as we were their original importers from Australia into this country, it is obvious that our stock which he " must assume . . . is of very poor quality " must either be birds of his own breeding, or their direct descendants. Thus his derogatory remarks about them bear a striking resemblance to another Australian invention—the boomerang !

As to the naming of this mutation, I should have thought that instead of merely indulging in destructive criticism of other people's efforts in this direction, it would have been more to the point if Mr. Whitehouse had found a suitable name for them himself.

EDWARD J. BOOSEY.

BRAMBLETYE,
KESTON,
KENT.

CANDIDATES FOR ELECTION

Dr. C. Fernando Costa, Rua Dr. Antonio Martins No/11, Estoril, Portugal. Proposed by J. Yealland.

E. F. Davis, Columbus Zoological Park, Columbus, Ohio, U.S.A. Proposed by A. A. Prestwich.

Mrs. M. D. Esson, 3 Western Avenue, Gidea Park, Romford, Essex. Proposed by Miss S. I. Hobday.

D. B. Hall, "Woodfield," Velley Hill, Corsham, Wilts. Proposed by Miss K. Bonner.

W. C. Hall, Arden House, 8 Randolph Road, London, W. 9. Proposed by W. D. Cummings.

Professor Dr. H. Hediger, Zoologischer Garten, Zurich, Switzerland. Proposed by A. A. Prestwich.

M. S. Henderson, Heather Cottage, Potten End, Berkhamsted, Herts. Proposed by B. H. Dulanty.

Anthony Jack, 15 Upper Berkeley Street, London, W. 1. Proposed by A. A. Prestwich.

G. F. Mees, *Avifauna*, Alphen a.d. Rijn, Holland. Proposed by A. A. Prestwich.

Mrs. C. M. Payne, The Malt House, Barford, Warwick. Proposed by C. M. Payne.

E. J. Rokosky, Racine Zoological Park, 2131 North Main Street, Racine, Wis., U.S.A. Proposed by Miss K. Bonner.

Carleton F. Smith, 625 Kenmore Drive, San Gabriel, Calif., U.S.A. Proposed by Miss K. Bonner.

L. R. Di Sabato, 2362 Joyce Avenue, Columbus, Ohio, U.S.A. Proposed by A. A. Prestwich.

Mrs. P. Sutton, M.R.C.V.S., 11 Culverden Park Road, Tunbridge Wells. Proposed by P. Sutton.

Mrs. P. V. Upton, Park Lodge, Margaretting, Ingatestone, Essex. Proposed by Miss P. Barclay-Smith.

Dr. Lawrence F. White, 1345 North Vermont Avenue, Los Angeles 27, Calif., U.S.A. Proposed by A. A. Prestwich.

NEW MEMBERS

The twenty-five Candidates for Election in the March-April, 1955, number of the Avicultural Magazine, were duly elected members of the Society.

RE-ADMITTED

Mrs. Virginia Ray (formerly Miss Virginia Dolbey), Hulwating Tea Estate, Amhuri P.O., Assam, India.

Miss I. Stoney, Central Lodge, 55 Central Hill, Upper Norwood, London, S.E. 19.

CORRECTED NAME AND ADDRESS

Dr. B. Warren Curlewis, 86 Crescent Road, Newport, N.S.W., Australia.

CHANGES OF ADDRESS

W. Bird, F.R.P.S., F.I.B.P., to The Coach House, 54 Gwendolen Avenue, Putney.

Captain A. A. Clarence, to 25 Elms Avenue, Parkstone, Dorset.

A. M. Cunningham, F.Z.S., to 21 Kitchener Road, East Finchley, N. 2.

Dr. R. S. Kirk, to 3 Park Crescent, London, W. 1.

R. J. Parren, to Avenue House, Tenmpon Road, Kings Lynn, Norfolk.

DONATIONS

(Coloured Plate Fund)

	£	s.	d.
W. L. Eaves	1	2	0
Captain C. Scott-Hopkins . .	1	0	0
Miss M. C. Maitland . .		10	0
J. A. W. Perry		10	0

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. *Payment must accompany the advertisement, which must be sent on or before the 15th of the month to* A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. *All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

FOR SALE OR EXCHANGE

One pair of the very rare Scarlet Cock-of-the-Rock, also rare Mexican Emerald Toucanette (*Aulacorhynchus prasinus*), and Green Jays (*Xanthoura yncas*).—Offers to P. H. HASTINGS, 182 Sultan Road, Landport, Portsmouth. Telephone: Portsmouth 4272.

FOR SALE

Surplus copies of coloured plates that have appeared in recent numbers of the Magazine, suitable for framing. Mountain Blue Robins, Green-headed Olive Sunbirds, Scarlet-tufted Malachite Sunbird, Hartlaub's Touraco, Blue-shouldered Robin-Chat, Scarlet Flycatchers, Wattled Starlings, Ceylon Blue Magpie, Falcated Teal, Rock Grass Parrakeet and Elegant Grass Parrakeet, Lineolated Parrakeets, Brown-headed Parrot, Red-bellied Conure, Yellow-cheeked Conure. Price 1*s.* each, post free, from the HON. SECRETARY, 61 Chase Road, Oakwood, London, N. 14.

BOOKS.—*Avicultural Magazines*—various bound volumes and parts. *Bird Notes*—various parts. *Foreign Birds*—various parts. Reichenow: *Papageien* (*Parrots*), 33 coloured plates of 257 figures. Stuart-Baker: *Indian Pigeons and Doves*, *Indian Ducks and their Allies*, *Game Birds of India*—many coloured plates, also *Cuckoo Problems*. Butler: *Foreign Finches in Captivity*, first edition 60 hand coloured plates, also second edition; *British Birds*, six volumes; *Birds of Great Britain and Ireland*, two volumes 115 coloured plates. Cox: *Coursing and Falconry*. Chapman: *Bird Life of the Borders*. Verner: *My Life among the Wild Birds of Spain*. Crawshay: *Birds of Tierra del Fuego*, 21 hand coloured plates. Frogatt: *Some Useful Australian Birds*, 65 coloured plates. Greene: *Parrots in Captivity*, three volumes 81 coloured plates. Seth-Smith: *Parrakeets*, 20 coloured plates. Hudson: *Birds of La Plata*, two volumes 22 coloured plates. *Ibis*: various volumes. Iredale: *Birds of Paradise and Bower Birds*. Legge: *History of the Birds of Ceylon*, 34 coloured plates. Murphy: *Oceanic Birds of South America*. *Nicoll's Birds of Egypt*, two volumes. Priest: *Birds of Southern Rhodesia*, four volumes, 40 coloured plates. Whittaker: *Birds of Tunisia*, 2 volumes. Bannerman: *Birds of Tropical West Africa*, eight volumes, also odd volumes 2 to 8. Bannerman: *Birds of West and Equatorial Africa*, two volumes. Alpheraky: *Geese of Europe and Asia*. Archer: *Birds of British Somaliland*, two volumes. Witherby: *Handbook of British Birds*, five volumes, also various volumes *British Birds*. Whistler: *Handbook of Indian Birds*. Cayley: *What Bird is That?—Australian Birds*. Barrett: *Parrots of Australasia*. Salim Ali: *Indian Hill Birds*. Roberts: *The Birds of South Africa*. Dresser: *Manual of Palaearctic Birds*, two volumes, also Monograph of the Rollers, 27 hand coloured plates. Evans: *Birds*. Mivart: *Monograph of the Lories*, 61 hand coloured plates. Taka-Tsukasa: *The Birds of Nippon*. Sclater: *On The Curassows*, 21 coloured plates. Shelley: *Sun Birds*, 121 hand coloured plates. Robinson & Chasen: *Birds of the Malay Peninsular*, 4 volumes, 100 coloured plates. Chubb: *Birds of British Guiana*. 2 volumes, 20 coloured plates. Peter Scott: *Morning Flight*, signed original edition. Hachisuka: *Birds of the Philippine Islands*, two volumes. Sclater: *Monograph of the Puff Birds*. Bowdler Sharpe: *Monograph of the Kingfishers*.—Apply to W. B. FROSTICK, 26 Minster Precincts, Peterborough.

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